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Group**

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Redondo Beach, CA 90278
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September 12, 1994
DT179.94

Mr. Rick Kaumeyer
California Regional Water Quality Control Board
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Subject: Monitoring Report For Monadnock Company

Dear Mr. Kaumeyer:

On July 27, 1994, TRW submitted a report entitled: "Groundwater Investigation Report, The Monadnock Company Facility, City of Industry, California." It has been brought to our attention that Figure 2 of the report, entitled: "Existing On-site Wells and Hydropunch Locations", had Monitoring Wells 8 and 11 in reverse order.

A copy of the revised report showing the correct well locations is enclosed. Please discard the previous report sent on July 27, 1994.

Sincerely,



Debbie Takashima
TRW Inc.
310-813-2722

cc: J.P. Kwan, TRW

IDEA

id environmental associates, inc.

**GROUNDWATER INVESTIGATION REPORT
THE MONADNOCK COMPANY FACILITY
CITY OF INDUSTRY, CALIFORNIA**

Prepared for:

**TRW Inc.
1900 Richmond Road
Cleveland, Ohio 44124**

August 1994

This report has been prepared under the supervision of Jeffrey P. Gwinn, a California-registered civil engineer. His stamp and signature appear below.

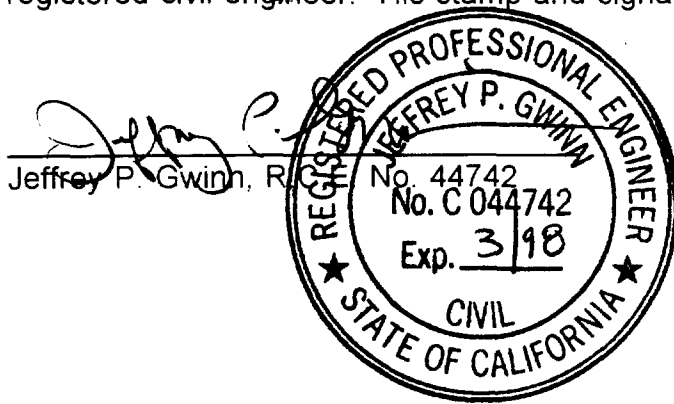


TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	SUMMARY OF ENVIRONMENTAL INVESTIGATIONS AND REMEDATION CONDUCTED AT MONADNOCK COMPANY FACILITY ...	1
2.1	Soil Remediation	1
2.2	Estimated Extent of VOC-Impacted Groundwater	2
2.3	Groundwater Sampling and Analyses	2
3.0	PHASE 3 DOWNGRAIDENT GROUNDWATER INVESTIGATION	3
3.1	Health and Safety	3
3.2	Soil Drilling and Sampling	4
3.3	Hydropunch Groundwater Sampling	4
3.4	Drilling and Sampling Equipment Decontamination	5
3.5	Quality Assurance/Quality Control	5
3.6	Groundwater Sample Analyses	5
3.7	Backfilling of Boreholes	6
3.8	Storage of Drill Cuttings	6
4.0	CONCLUSIONS AND RECOMMENDATION	6
5.0	REFERENCE	7

LIST OF TABLES

1	Onsite Well Details
2	Results of Groundwater Sampling and Analyses
3	Hydropunch Sample Analytical Results

LIST OF FIGURES

1	Site Location
2	Existing Onsite Wells and Hydropunch Locations
3	Results of MW-2 Slug Test
4	Results of MW-8 Slug Test

APPENDICES

A	Health and Safety Plan
B	Boring Logs
C	Drilling and Sampling Protocols
D	Chain-of-Custody Form and Analytical Laboratory Report
E	Groundwater Sampling and Handling Protocols

**GROUNDWATER INVESTIGATION REPORT
THE MONADNOCK COMPANY FACILITY
CITY OF INDUSTRY, CALIFORNIA**

1.0 INTRODUCTION

TRW Inc. (TRW) previously operated an aerospace fastener manufacturing operation at the present Monadnock Company site from 1968 until 1980. The site is located at 18301 East Arenth Avenue in City of Industry, California (see Figure 1 for site location).

As a condition of the amended Cleanup and Abatement Order 88-057 (dated September 29, 1989) issued by the California Regional Water Quality Control Board - Los Angeles Region (RWQCB), TRW is required to "determine any other contamination sources in the vadose zone on site (at the Monadnock Company facility) and evaluate threat to groundwater from residual contamination." To evaluate the extent of migration of volatile organic compounds (VOCs) in groundwater originating from the Monadnock Company site, TRW conducted a groundwater investigation, both onsite and offsite. This report describes the procedures and results of the groundwater investigation.

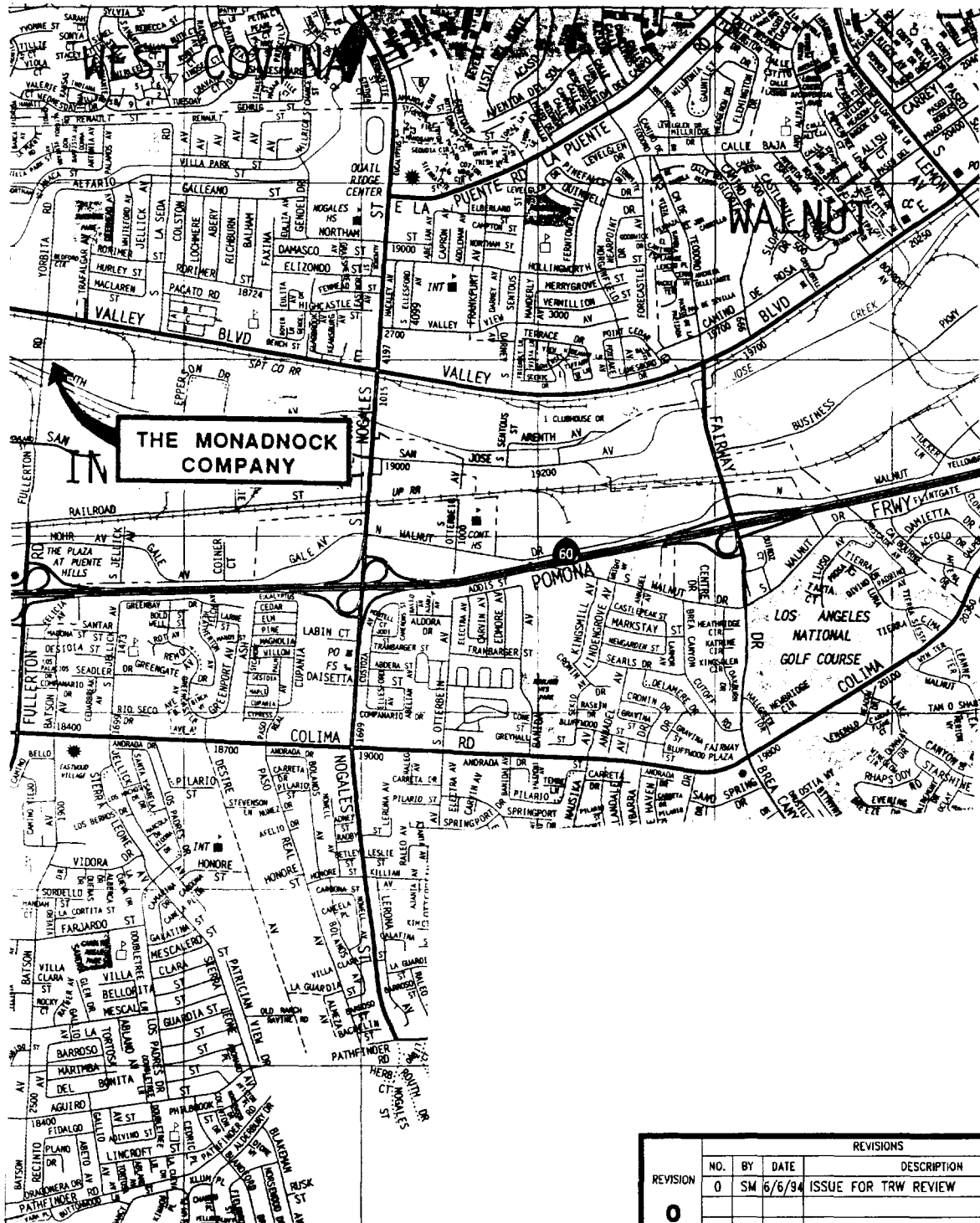
2.0 SUMMARY OF ENVIRONMENTAL INVESTIGATIONS AND REMEDIATION CONDUCTED AT MONADNOCK COMPANY FACILITY

To date, environmental investigations at the Monadnock Company facility have focused on potential vadose zone contamination from historically-used chemicals including VOCs, metals, acids, bases, and cyanide. Results of these investigations indicated that subsurface soils beneath the Monadnock Company facility had been impacted by VOCs. As a result, TRW implemented a soil remediation program to mitigate VOCs in the soil beneath the Monadnock Company site. A description of the soil remediation efforts is presented in Section 2.1.

2.1 Soil Remediation

Remediation of elevated concentrations of VOCs in subsurface soils was accomplished using a vapor extraction system (VES). A summary of the remediation and confirmatory sampling program is presented in the report entitled "Closure Report on Soil Remediation at Monadnock Company Facility in City of Industry, California," dated December 1993. A copy of this report was submitted to the RWQCB on December 14, 1993.

Operation of the VES occurred from April 1993 through August 1993. During this time, the concentrations of VOCs in the soil gas steadily declined to the point that



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PROJECT NO. 9104M	DRAWN BY R.CARTER	CHECKED BY	APPROVED BY
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FIGURE 1

concentrations were below the detection limit in all areas of the Monadnock Company site except the degreaser area within the manufacturing building. Residual concentrations of VOCs in the soil gas beneath the degreaser area were less than 7 micrograms of contaminant per liter of gas ($\mu\text{g}/\text{l}$). The concentrations of VOCs in the soil matrix beneath the degreaser area were below detection limits.

Based on these results, ID Environmental Associates, Inc. (IDEA) concluded that residual VOC concentrations in the soil gas and soil matrix were below levels that could significantly affect underlying groundwater or present adverse exposure to human health or the environment. The RWQCB, in a letter dated May 6, 1994, agreed with these conclusions and concurred that no further action is required with respect to soil remediation at the site.

2.2 Estimated Extent of VOC-Impacted Groundwater

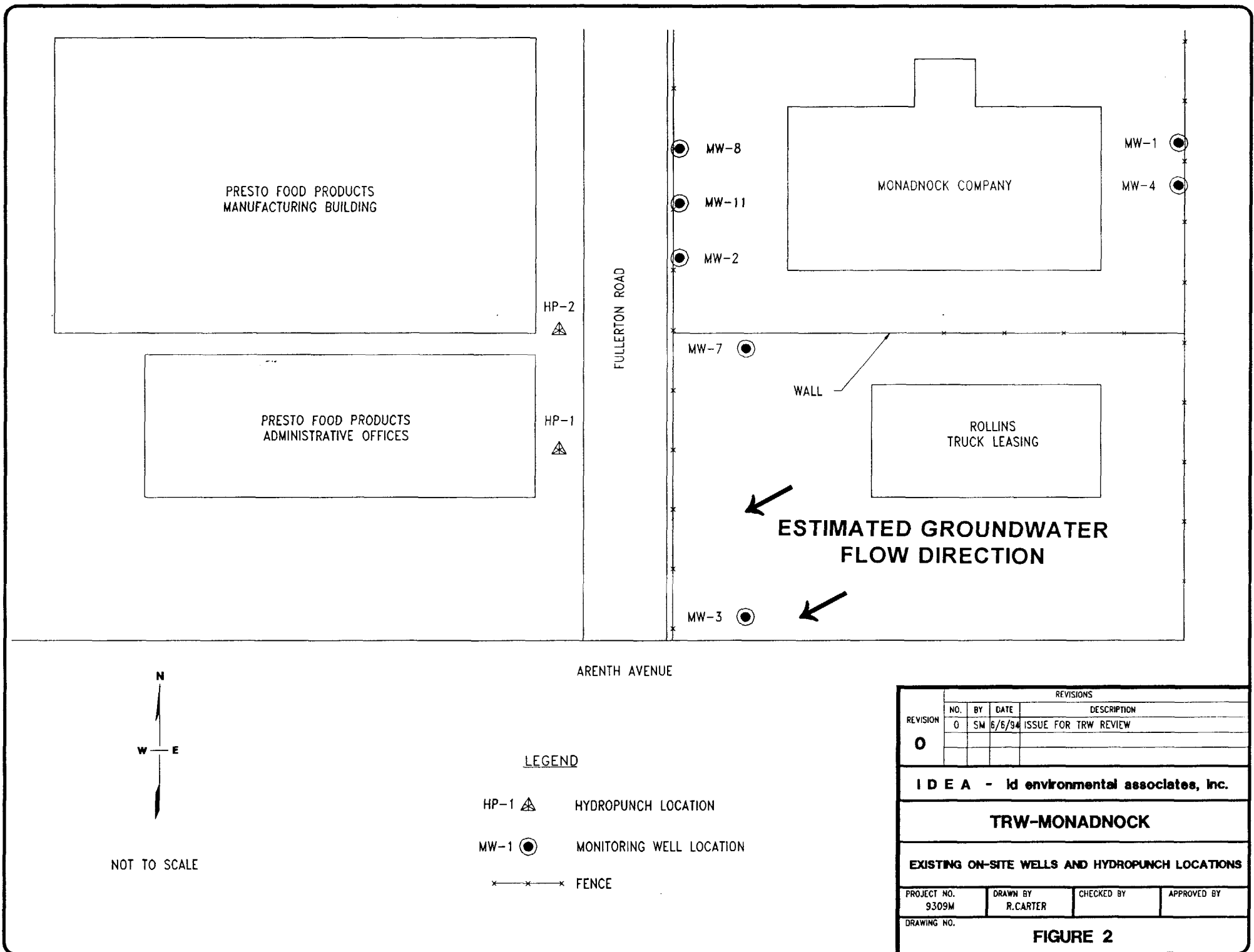
Based on slug test data, TRW estimated the groundwater velocity in the first saturated zone beneath the Monadnock Company site. The slug tests were conducted on November 16, 1992 using Wells MW-2 and MW-8, the locations of which are shown on Figure 2. The slug tests were conducted by depressing the groundwater elevations in each well. Measurements were then made of groundwater elevation recovery (measured manually using an electronic sounder) versus elapsed time. Results of the slug tests are presented on Figures 3 and 4.

Using the analysis procedures of Bouwer and Rice (Bouwer and Rice, 1988), it was estimated that the groundwater velocity in the first saturated zone beneath the Monadnock Company site is approximately five feet per year. Well soundings conducted in Wells MW-1, MW-2, MW-3, MW-4, and MW-8 (shown on Figure 2) indicated that the groundwater flows in a southwest direction.

Chemical usage history for the Monadnock Company site indicates that chlorinated solvents potentially were used at the site from 1966 through 1988. Assuming that VOCs may have impacted groundwater beneath the Monadnock Company site in 1966, data from the slug tests indicate that offsite migration of these VOCs could be as much as 135 feet (27 years times 5 feet per year). This estimation places the potential leading edge of the assumed groundwater plume at the eastern perimeter of the Presto Food Products site, located at 18275 East Arenth Avenue, across Fullerton Road from the Monadnock Company.

2.3 Groundwater Sampling and Analyses



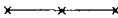
To date, seven groundwater monitoring wells (Wells MW-1, MW-2, MW-3, MW-4, MW-7, MW-8, and MW-11) have been installed at the Monadnock Company site. The



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LEGEND

- HP-1  HYDROPUNCH LOCATION
- MW-1  MONITORING WELL LOCATION
-  FENCE

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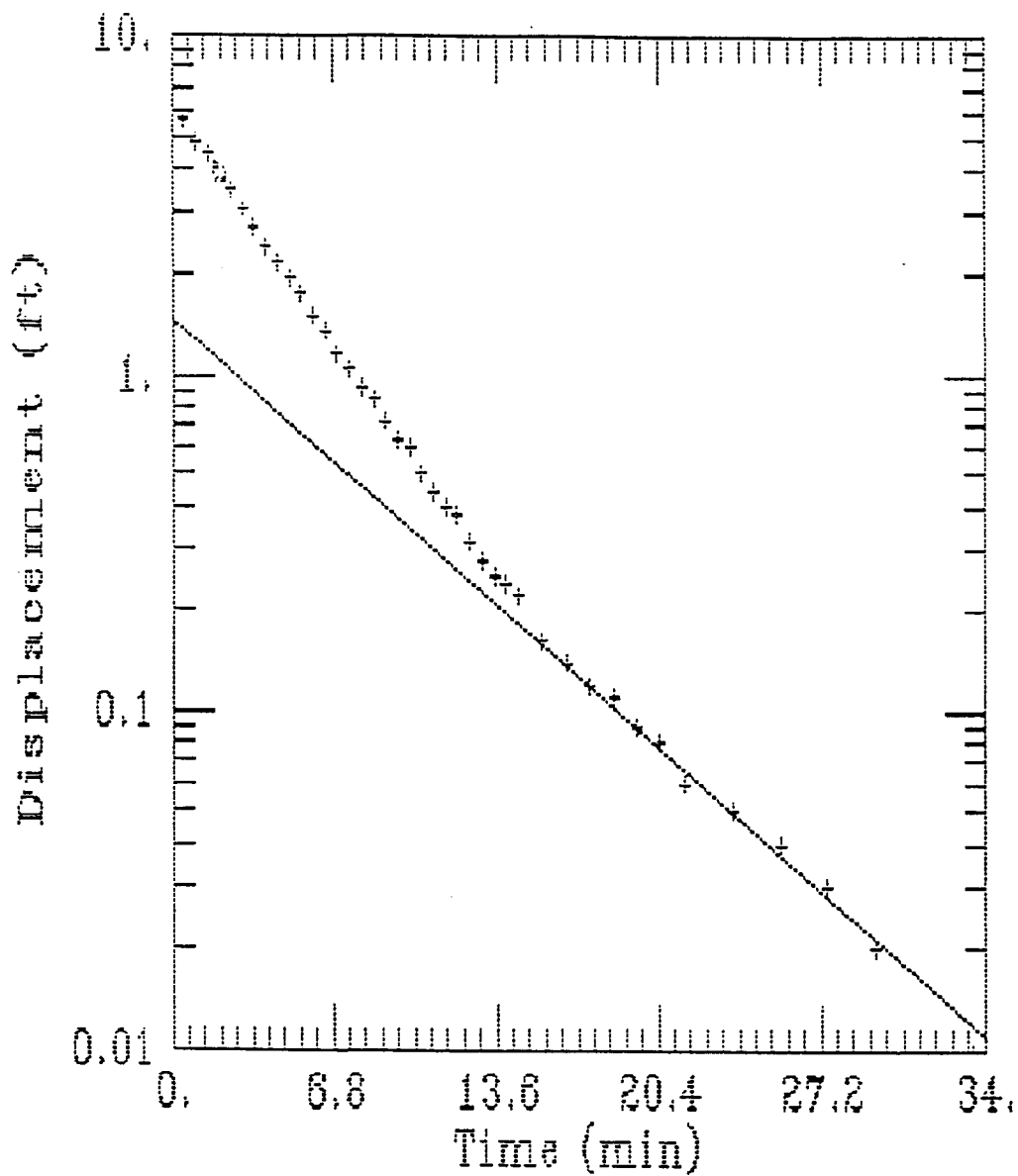
TRW-MONADNOCK

EXISTING ON-SITE WELLS AND HYDROPUNCH LOCATIONS

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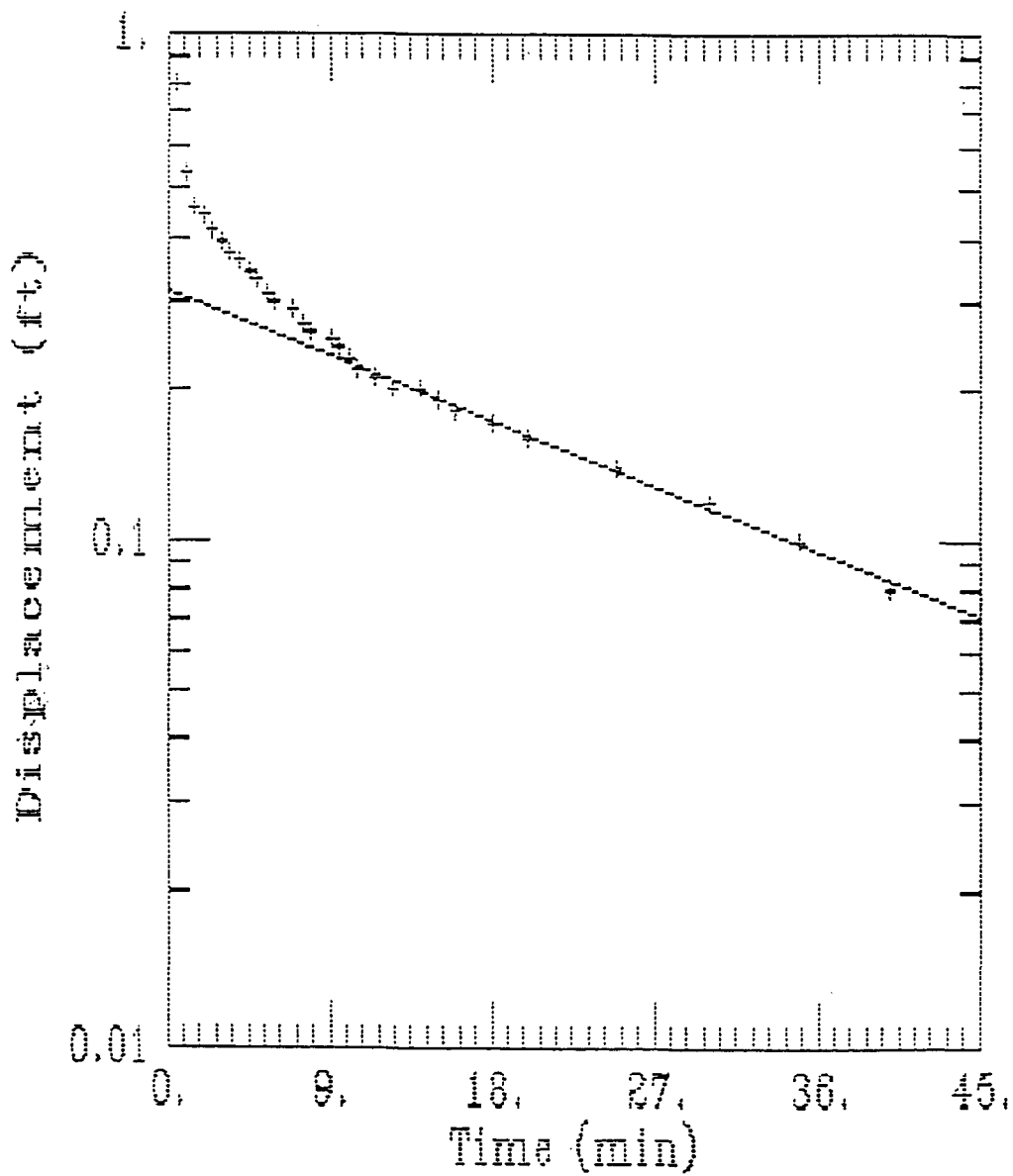
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FIGURE 2



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RESULTS OF MW-2 SLUG TEST				
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FIGURE 3



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RESULTS OF MW-8 SLUG TEST

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DRAWING NO. **FIGURE 4**

locations of these wells are shown on Figure 2. A summary of the well details is presented in Table 1.

Groundwater sampling and analysis have been conducted in some or all of these wells by various environmental consultants and TRW from July 1986 to June 1994. Results of the chemical analyses of groundwater samples collected from these wells are shown in Table 2.

Sounding of the seven wells was conducted by TRW on June 21, 1994. Based on these measurements, IDEA estimates that the first saturated zone occurs beneath the Monadnock Company site at a depth between 30 and 35 feet below ground surface (bgs).

3.0 PHASE 3 DOWNGRAIENT GROUNDWATER INVESTIGATION

To determine that the potential leading edge of VOC migration in groundwater from the Monadnock Company site is at the eastern perimeter of the Presto Food Products site, Hydropunch sampling was conducted at two locations (shown on Figure 2) on May 21, 1994. The sample locations were selected using the slug test data discussed in Section 2.2.

Hydropunch drilling and sampling were performed by Discovery Drilling of Garden Grove, California. Mr. Richard Kaumeyer of the RWQCB was present for the majority of the Hydropunch sampling program.

3.1 Health and Safety

The Hydropunch sampling program was conducted in conformance with the health and safety plan (HSP) presented in Appendix A. TRW, IDEA, Discovery Drilling, and ENV America (the consultant for Presto Food Products) personnel associated with the project were apprised of the contents of the HSP at a meeting held at the Presto Food Products site immediately prior to initiation of the drilling and sampling program.

During the Hydropunch sampling program, the VOC concentration in the air above the soil cuttings and within the worker breathing zone was monitored using a Foxboro Century Organic Vapor Analyzer (OVA), model number 128. The OVA was calibrated immediately prior to initiation of the field work using a 50 part per million hexane in air gas standard.

Results of the field measurements are included on the boring logs attached in Appendix B. The VOC concentration in the air above the soil cuttings or in the worker breathing zone did not exceed the limits specified in the HSP.

TABLE 1
ONSITE WELL DETAILS

WELL NUMBER	WELL DIAMETER (in)	TOTAL WELL DEPTH (ft bgs)	SCREEN INTERVAL (ft bgs)
MW-1	4	50	29-49
MW-2	4	51.5	25-45
MW-3	4	46.5	24-44
MW-4	4	62	20-60
MW-7	4	60	26-56
MW-8	4	60	26-56
MW-11	4	100	77-97

TABLE 2

RESULTS OF GROUNDWATER SAMPLING AND ANALYSES

WELL NUMBER	ANALYTE DETECTED	DATE OF SAMPLING AND CONCENTRATION (µg/l)										
		7/86	9/86	11/86	2/87	3/87	9/87	2/88	1/89	6/89	1/90	6/94
MW-1	1,1,1-TCA	<25	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND
	1,1-DCE	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	PCE	<25	NA	NA	NA	NA	NA	NA	ND	ND	1.3	ND
	TCE	<25	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND
MW-2	1,1,1-TCA	380	180	350	77	NA	12	25	ND	ND	7	ND
	1,1-DCE	NA	NA	NA	NA	NA	NA	NA	NA	180	840	120
	PCE	310	600	770	190	NA	102	78	70	320	410	130
	TCE	710	560	710	620	NA	182	102	120	270	460	590
MW-3	1,1,1-TCA	<5	NA	6	NA	NA	NA	2	ND	1	ND	ND
	1,1-DCE	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND
	PCE	<5	NA	100	NA	NA	NA	6.2	ND	6	ND	ND
	TCE	<5	NA	4	NA	NA	NA	2.6	ND	2	2	ND
MW-4	1,1,1-TCA	NA	NA	NA	NA	0.5	NA	NA	NA	NA	ND	ND
	1,1-DCE	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND
	PCE	NA	NA	NA	NA	1.6	NA	NA	NA	NA	1.9	ND
	TCE	NA	NA	NA	NA	1.0	NA	NA	NA	NA	ND	ND
MW-7	1,1,1-TCA	NA	NA	NA	NA	48	56	8.2	ND	50	1.6	ND
	1,1-DCE	NA	NA	NA	NA	NA	NA	NA	NA	42	440	40
	PCE	NA	NA	NA	NA	81	93	74	150	60	160	42
	TCE	NA	NA	NA	NA	456	200	152	200	66	400	280
MW-8	1,1,1-TCA	NA	NA	NA	NA	32	3	NA	ND	30	ND	ND
	1,1-DCE	NA	NA	NA	NA	NA	NA	NA	NA	180	100	16
	PCE	NA	NA	NA	NA	110	27	NA	80	320	56	6.8
	TCE	NA	NA	NA	NA	180	47	NA	90	400	160	34
MW-11	1,1,1-TCA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
	1,1-DCE	NA	NA	NA	NA	NA	NA	NA	NA	50	231	ND
	PCE	NA	NA	NA	NA	NA	NA	ND	200	10	5.5	7
	TCE	NA	NA	NA	NA	NA	NA	26	20	270	50	86

TABLE 2 CONTINUED

NOTES:

- 1) 1,1,1-TCA means 1,1,1-trichloroethane
1,1-DCE means 1,1-dichloroethene
PCE means tetrachloroethene
TCE means trichloroethene
- 2) NA means analyte not analyzed.
- 3) ND means not detected.
- 4) The analytical results for the groundwater samples collected and analyzed in June 1994 list the organic compounds detected with the highest concentrations. Other organic compounds were also detected; the complete analytical laboratory report for these samples is included in Appendix D.

3.2 Soil Drilling and Sampling

Drilling was accomplished using a CME-75 drill rig equipped with 7-inch outside diameter hollow stem augers. Drilling was first started at the location of HP-1 shown on Figure 2. After completion of the first soil boring, the drill rig was moved to the location of HP-2 shown on Figure 2 and a second borehole was drilled. Logs of the borings (developed from visual observation of the drill cuttings) are presented in Appendix B. Drilling and soil sampling protocols are presented in Appendix C.

In each boring, a soil sample was collected at a depth of approximately 15 feet bgs for chemical characterization of the soil displaced by the drilling. Both soil samples were submitted to CKY Analytical Laboratories, a California-certified hazardous waste analytical laboratory, in Torrance, California. The soil samples were analyzed for purgeable halogenated organics using EPA Method 8010. No VOCs were detected in the soil samples (detection limits ranged from 5 to 20 µg/kg). Copies of the chain-of-custody form and analytical laboratory report are included in Appendix D.

3.3 Hydropunch Groundwater Sampling

After the borehole at HP-1 was drilled to a depth of approximately 30 feet bgs, water was observed on the drill rods. Drilling was halted and the Hydropunch sampler was driven to a depth of approximately 33.5 feet bgs. Following this, the outer casing of the sampler was withdrawn about one foot to expose the inner screen. After thirty minutes, the water level in the Hydropunch sampler was measured. Because an insufficient quantity of water was present, the augers and Hydropunch sampler were left in place and the drill rig was moved to the location of HP-2.

When the borehole at HP-2 reached a depth of approximately 41 feet bgs, water was observed on the drill rods. Drilling was stopped to allow time for water to enter the borehole.

At this time, sufficient water was observed within the Hydropunch screen at HP-1 and groundwater samples were collected. Two 40-milliliter VOA samples were collected for analysis by TRW, and one 40-milliliter VOA sample was collected by ENV America. Groundwater sampling and handling protocols are included in Appendix E. After the collection of groundwater samples at HP-1, the water level was measured within the Hydropunch screen. The water level was measured at 30.9 feet bgs.

Following collection of the groundwater samples at HP-1, the water level at HP-2 was measured. Because approximately one foot of water was measured within the borehole, the Hydropunch sampler was pushed to a depth of about 48 feet bgs. After

20 minutes, a column of approximately 12 feet of water was observed within the Hydropunch sampler. One 40-milliliter VOA sample was collected by TRW, and one 40-milliliter VOA sample was collected by ENV America.

3.4 Drilling and Sampling Equipment Decontamination

Drill augers were steam-cleaned at the driller's facility prior to their being brought to the Presto Food Products site. Sample equipment (both soil sampling and Hydropunch sampling) was cleaned between sample locations using the following general procedures:

- o Water rinse, brush assisted if necessary, to remove dirt and mud
- o Water wash with detergent (TSP)
- o Rinse with deionized water to remove detergent
- o Air dry

3.5 Quality Assurance/Quality Control

For quality assurance/quality control (QA/QC) purposes, two samples of the final rinse water used for bailer decontamination was collected. One water sample was collected prior to use of the bailer for collection of the groundwater samples at HP-1, and one water sample was collected prior to use of the bailer for collection of the groundwater samples at HP-2. In addition, a trip blank was prepared in the field. The rinseate samples and trip blank were handled in the same manner as the groundwater samples.

3.6 Groundwater Sample Analyses

The groundwater samples, rinseate samples, and trip blank were submitted to CKY Analytical Laboratories. The samples were analyzed for purgeable halogenated organics using EPA Method 601.

Copies of the chain-of-custody form and analytical laboratory report are included in Appendix D. The results of the chemical analyses are presented in Table 3.

TABLE 3
HYDROPUNCH SAMPLE ANALYTICAL RESULTS

SAMPLE ID	CONCENTRATION OF ANALYTE DETECTED (µg/l)					
	1,1-DCE	1,1-DCA	1,1,2-TCA	1,1,1-TCA	TCE	PCE
HP-1	66	3.6	1.4	ND(1)	140	49
HP-2	300	4.3	2.2	ND(1)	190	22
HP-1 RINSE	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
HP-2 RINSE	2.1	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
TRIP BLANK	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)

NOTES:

- 1) 1,1-DCE means 1,1-dichloroethene
1,1-DCA means 1,1-dichloroethane
1,1,2-TCA means 1,1,2-trichloroethane
1,1,1-TCA means 1,1,1-trichloroethane
TCE means trichloroethene
PCE means tetrachloroethene
- 2) ND() means not detected at the detection limit shown in parentheses.

3.7 Backfilling of Boreholes

Both boreholes were backfilled with Pure Gold bentonite chips by pouring the chips down the center of the hollow stem auger as the augers were removed. The chips were hydrated as they were placed in each of the boreholes. Bentonite chips were placed to within six inches of the ground surface. The final cover for each borehole consisted of a cement patch, placed even with the surrounding asphalt.

3.8 Storage of Drill Cuttings

Drill cuttings from the borings at HP-1 and HP-2 were placed in separate 55-gallon drums. Each drum was marked with the date, boring identification, and depth from which soil was obtained. The drums were moved to a remote location at the Presto Food Products facility for temporary storage prior to receipt of the analytical data to determine the proper disposal method.

4.0 CONCLUSIONS AND RECOMMENDATION

As shown by the data presented in Tables 2 and 3, the concentrations of 1,1-DCE and TCE in the Hydropunch samples collected beneath the Presto Food Products site are similar in magnitude to the highest concentrations of these compounds detected in groundwater samples collected at the Monadnock Company site from July 1986 to June 1994 (both are hundreds of micrograms of contaminant per liter of water). Concentrations of PCE detected in the Hydropunch samples are one order of magnitude less than the highest concentrations of PCE detected in groundwater samples collected at the Monadnock Company site.

Based on the sampling data, the leading edge of VOC contamination in groundwater originating from the Monadnock Company site may be present beneath the eastern portion of the Presto Food Products property. However, the VOC concentrations within this leading edge are still lower than those beneath the Monadnock Company property, suggesting relatively slow groundwater migration in this area. Data obtained from the slug tests also indicate that the rate of groundwater movement in this area is relatively slow, confirming the assumption of limited plume migration.

To date, onsite sources of VOCs have been identified and remediated. The probability of continuing VOC contribution to the underlying groundwater at the Monadnock Company site is virtually non-existent. Therefore, IDEA believes that further offsite investigation of VOC-impacted groundwater migrating from the Monadnock Company site is not warranted at this time.

IDEA estimates that the volume of groundwater impacted by VOCs originating from the Monadnock Company site is insignificant compared to the volume of impacted groundwater within the regional plume of the Puente Valley. Because the contaminants presently in the regional groundwater will be remediated under the regional program established by the United States Environmental Protection Agency, the need to remediate low VOC concentrations in the groundwater beneath the Monadnock Company site will most likely not be necessary.

TRW is presently an active participant in the regional remedial investigation/feasibility study of impacted groundwater in the Puente Valley Operable Unit. As such, the investigation of groundwater migrating from the Monadnock Company site will be assessed under the regional program. Consequently, the remediation of impacted groundwater adjacent to, and migrating from, the property boundary will be accomplished under the regional program, thus eliminating the need to remediate low concentrations of VOCs in groundwater on a site-specific basis.

Because VOCs were detected in groundwater samples collected along the Monadnock Company property boundary during June 1994, IDEA recommends that an onsite groundwater monitoring program be established to track the plume movement from the site. Data collected on groundwater VOC concentrations and flow rate suggest that a semi-annual monitoring program would be most appropriate at this time.

5.0 REFERENCE

Bouwer, H. and Rice, R.C., Update to Paper Originally Presented in Water Research (June 1976), 1988.

APPENDIX A
HEALTH AND SAFETY PLAN

IDEA

id environmental associates, inc.

HEALTH AND SAFETY PLAN CITY OF INDUSTRY, CALIFORNIA

Prepared for:

TRW Inc.
One Space Park R2/1112
Redondo Beach, California 90278

May 1994

HEALTH AND SAFETY PLAN
CITY OF INDUSTRY, CALIFORNIA

Project Manager: Steve Mulligan

Site Safety Officer: Jeff Gwinn

Start Date: May 21, 1994

Expiration Date: December 31, 1994

APPROVALS:

Steve Mulligan
Project Manager

Date 5-19-94

Jeff Gwinn
Site Safety Officer

Date 5/19/94

The following indicate by their signatures that they understand the contents of this health and safety plan.

NAME	ORGANIZATION
<u>Steve Hurler</u>	<u>DISCOVERY DRILLING</u>
<u>Mark Palmer</u>	<u>" "</u>
<u>Ken Pickford, CEO</u>	<u>ENV America</u>
<u>Debbie Takashima</u>	<u>TRW inc</u>
<u>Steve Mulligan</u>	<u>DEA</u>
<u>J.H. Jones</u>	<u>IDEA</u>
<u> </u>	<u> </u>

HEALTH AND SAFETY PLAN CITY OF INDUSTRY, CALIFORNIA

1.0 INTRODUCTION

This health and safety plan (HSP) presents health and safety requirements and guidelines for performance of work for the TRW Inc. Monadnock project in City of Industry, California. It is in compliance with applicable sections of 29 CFR 1910.120 and was prepared for exclusive use by employees of ID Environmental Associates (IDEA) and its subcontractors. This HSP shall not be used for work other than that described in Section 3.0, nor shall it be modified or used after the expiration date without written approval by the Project Manager (PM). This HSP is not valid unless it is signed and dated by the PM and Site Safety Officer (SSO).

Subcontractors may use their own HSPs. However, general health and safety requirements in HSPs prepared by subcontractors must be as stringent as those contained in this HSP. In addition, subcontractor health and safety requirements for field activities covered in this HSP must be as stringent as those contained in this HSP.

The PM has overall responsibility for implementing this HSP. The SSO reports to the PM, directs day-to-day health and safety activities in the field, and must be present at the work site whenever work is being performed at the site by employees of IDEA or its subcontractors. The PM and SSO have the authority to suspend work when the health or safety of field personnel or the public is threatened and to remove individuals from the site for engaging in activities that jeopardize the health or safety of themselves or others.

2.0 SITE INFORMATION

The Monadnock project relates to a former TRW facility that manufactured aerospace fasteners. The facility is presently owned by a different owner and continues to manufacture aerospace fasteners. The site is located at the intersection of Arenth Avenue and Fullerton Road in City of Industry, California. It has been determined that chlorinated organic compounds, including tetrachloroethene (PCE), trichloroethene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), and 1,1-dichloroethene (1,1-DCE), are present in subsurface soils at the site.

3.0 DESCRIPTION OF WORK

TRW proposes to conduct a groundwater investigation program for the Monadnock project. The purpose of the program is to evaluate if onsite and offsite groundwater

has been environmentally impacted by chlorinated organic compounds originating at the Monadnock site. To this end, the following activities will be conducted:

- o Hydropunch sampling at the Presto Foods Company site located immediately downgradient of the Monadnock property. The purpose of the Hydropunch sampling is to locate the leading edge of a chlorinated organic compound plume in groundwater from the Monadnock property.
- o If the Hydropunch sampling confirms the location of the leading edge of the plume, groundwater monitoring wells will be installed at the Presto Foods Company site.
- o Both onsite and offsite groundwater monitoring wells will be sampled.

4.0 ASSESSMENT OF HAZARDS

4.1 Chemical Exposure

Several of the chemicals detected in soil and groundwater samples collected at the Monadnock site are known animal carcinogens and may have the potential to be human carcinogens.

4.1.1 Inhalation Exposure

The major route for exposure to chlorinated organic compounds is by inhalation. The lipid solubility of the particular compound dictates how quickly and completely the organic vapor will be absorbed from the lungs and enter the bloodstream. Signs of acute intoxication from organic compound exposure are central nervous system disturbances such as disorientation, euphoria, giddiness, and confusion which can lead to convulsions, unconsciousness, and death with extended exposure. Low-level, and often surprisingly short, exposures to organic compounds can cause liver damage and induction of liver microsomal enzymes, which can influence how the body handles other chemicals.

4.1.2 Dermal Exposure

The second major route of exposure to organic compounds is the skin. As with inhalation, the lipid solubility of the chemical determines the degree of absorption of the chemical in contact with skin. Dermal absorption may occur from a soil or aqueous medium.

4.1.3 Ingestion Exposure

Organic contaminants can enter the body by ingestion. Therefore, drinking and eating will not be allowed on the site. Prior to eating or before leaving the site, personnel will wash their hands and faces.

4.2 Fire Hazard

Explosive levels of organic compounds potentially could be encountered during subsurface intrusive operations. For this reason, an open flame within a radius of 25 feet from a new boring will not be allowed, and field instrumentation will be used to monitor intrusive operations. A fire extinguisher will also be provided.

4.3 Physical Hazards

Buried electric, water, telephone, and gas transmission lines may be present. Utility companies should be contacted to locate these lines.

5.0 RISK EVALUATION/RISK MANAGEMENT

5.1 Inhalation Exposure

Inhalation exposures shall not exceed the lowest worker exposure limit established for each chemical. Permissible exposure limits (PELs) are listed in Table 1 for chemicals suspected as contaminants.

5.1.1 Inhalation Exposure to Organic Vapors

An organic vapor analyzer (OVA) equipped with a flame ionization detector will be used to monitor organic vapors in the breathing zone. Respirators with high efficiency organic vapor cartridges will be worn when OVA readings exceed 10 parts per million (ppm) above background in the breathing zone. If the readings

TABLE 1
PERMISSIBLE EXPOSURE LIMITS

COMPOUND	PERMISSIBLE EXPOSURE LIMIT (ppm)
PCE	25
TCE	25
1,1,1-TCA	350
1,1-DCE	1

Source: California Code of Regulations, Title 8 (Occupational Safety and Health)

exceed 10 ppm for more than 15 minutes, work will be stopped and an alternate method evaluated. This criterion is based on the following data:

- o 1,1-DCE has the lowest PEL (1 ppm)
- o Based on the concentrations of organic compounds detected in soil samples collected from the area in which the pilot test wells will be installed, it is estimated that 1,1-DCE will comprise less than 10% (by volume) of the vapors that workers will potentially encounter.

5.1.2 Inhalation Exposure to Dust

All attempts will be made to keep dust levels to a minimum during work at the site. If dusty conditions prevail, the ground will be kept wet. If this is not possible and visible dust is present, dust masks or respirators with high efficiency particulate cartridges will be worn.

5.2 Dermal Absorption of Chemicals

Dermal exposure to contaminants activities will be minimized by the use of the required personnel protective equipment (see Section 8.1.1).

6.0 HEALTH AND SAFETY GUIDELINES FOR SUBCONTRACTORS

All subcontractors and operators are responsible for ensuring that their respective employees comply with all federal, California, and/or local health and safety standards, laws, and rules. The SSO for IDEA will assist in these matters, but it is the responsibility of the subcontractors to ensure compliance.

7.0 GENERAL HEALTH AND SAFETY REQUIREMENTS

The names of all IDEA and subcontractor employees that perform work on the site must be recorded and the record maintained in the health and safety file of the project administration office.

7.1 Site Health and Safety Officer

The PM has overall responsibility for site health and safety. The SSO is responsible for assisting the PM in carrying out the health and safety requirements detailed in this plan. However, the SSO has the authority to halt work or dismiss people from the site if they do not adhere to this plan.

- o The SSO will maintain a field logbook. Information recorded in the logbook will include such items as working hours, names of people entering and leaving the site, instrument status, background readings, action levels reached or exceeded, and all other information relevant to health and safety at the site.
- o The SSO will maintain a list of addresses and telephone numbers of emergency assistance units (ambulance service, police, and hospitals), and will inform other members of the field team of the existence and location of this list.

7.2 Safety Briefing

Before onsite work commences, all IDEA and subcontractor employees assigned to work on the site must be briefed by the SSO on the site-specific health and safety requirements contained in this plan. The health and safety officer giving the briefing should test each worker's knowledge and understanding of the provisions of this HSP and shall not allow anyone who does not appear to understand the provisions perform work in exclusion areas. The dates of briefing sessions and attendees must be recorded and the records maintained in the health and safety file of the project administration office.

7.3 Distribution of HSP

Before the work begins, a copy of this HSP must be provided to each IDEA and subcontractor employee assigned to work at the site, as well as to an authorized representative of each firm contracted by IDEA to perform work on site. Individuals assigned to work at the site must acknowledge receipt of the plan and agree to comply with its provisions in writing.

7.4 Incident Reporting

Injuries, exposures, illnesses, safety infractions, and other incidences must be reported to the PM within 24 hours of occurrence.

7.5 Visitor Clearances

Visitors will not be allowed within 25 feet of intrusive work, unless they comply with the safety requirements of this plan. Barrier tape will be used to mark area visitors are not to enter.

8.0 SITE-SPECIFIC HEALTH AND SAFETY REQUIREMENTS

8.1 Safety Equipment Requirements

8.1.1 Personnel Protection

The following items are needed for personnel protection:

- o Hard hat
- o Boots, steel-toed butyl/neoprene
- o Gloves, butyl/neoprene (over-glove)
- o Eye protection (safety glasses)
- o First aid kit
- o Fire extinguisher
- o Barricades

The following items may be needed if the inhalation exposure to organic vapors (described in Section 5.1.1) is exceeded:

- o Respirator, full-face with organic vapor cartridges (with cartridges changed daily or more frequently, as needed)

8.1.2 Detection Instruments

The following detection equipment is needed:

- o OVA

8.2 Preventative Measures for Sampling Activities

During drilling operations, personnel within the work zone (10 feet) must wear steel-toed boots, hard hat, safety glasses, and gloves.

8.3 Site Control/Work Zone

Construction barrier tape and/or barricades will be used to define a 25-foot **NO SMOKING** and **Limited Access Zone** around the work site. Once intrusive work commences, no one will be allowed into the zone without appropriate protective gear and training, as required by this plan. The SSO will require proof of training and inspect the equipment prior to granting entry.

8.4 Personnel and Equipment Decontamination

Prior to eating or drinking, personnel will wash their hands and faces with soap and water. All contaminated water will be left on site.

8.5 Eating/Drinking/Smoking

Eating, drinking, or smoking will not be allowed within the 25-foot Limited Access Zone.

9.0 NAME OF SUBCONTRACTORS (FIELD WORK)

Name: Discovery Drilling
Address: 13432 Barnett Way, Garden Grove, CA
Telephone Number: 714-537-8454
Authorized Representative: Dudley

10.0 RESPONSIBLE INDIVIDUALS

Project Manager (PM):

Steve Mulligan
ID Environmental Associates, Inc.
11325 Goldenrod Avenue
Fountain Valley, California 92708
(714) 839-1744

Site Safety Officer (SSO):

Jeff Gwinn
ID Environmental Associates, Inc.
11325 Goldenrod Avenue
Fountain Valley, California 92708
(714) 839-1744

11.0 NEAREST EMERGENCY MEDICAL FACILITY

Nearest Facility:

German Medical Group
18053 East Valley Boulevard
City of Industry, California

(818) 965-0939

Directions to facility:

- 1) Go north on Fullerton Road.
- 2) Left on Valley Boulevard.
- 3) German Medical Group is on right, approximately 1/2 mile from Fullerton Road.

APPENDIX B
BORING LOGS

DATE OF BORING 5/21/94 WATER DEPTH 30 feet DATE MEASURED 5/21/94
 TYPE OF DRILL RIG CME 75; Discovery Drilling, S. Haugh HOLE DIAMETER 7-inches
 WEIGHT OF HAMMER 140 lbs. FALLING 30-inch SAMPLES 1





DEPTH, feet	SAMPLES	BLOWS, feet	DESCRIPTION	UNC. COMP. STRENGTH, ksf	OVA HEADSPACE, ppm	OVA BREATHING ZONE	OVA CUTTINGS, ppm
SURFACE ELEVATION:							
5			2-inches asphalt concrete. Dark brown, moist, SILTY CLAY (CL), with trace SAND, no odor. <div> <div> Becomes medium brown. </div> <div> Becomes SANDY SILTY CLAY (CL). </div> </div>			3/3	3/4
10							
15	1	30 37 41	Light brown, moist, SILTY fine-grained SAND (SM) with trace GRAVEL up to 1-inch across, no odor. Light tan, moist, fine-grained SAND (SP), with trace GRAVEL up to 1-inch across, no odor.		1/1.5	3/3	3/3
20			Light brown, moist, SILTY CLAYEY SAND (SM-SC), with GRAVEL up to 1-inch across, no odor.				
25			Light brown, moist, SILTY SAND (SM), with GRAVEL up to 1/2-inch across, no odor.			2/2	2/3
30			GRAVEL up to 3-inches. Drill bit is wet.			1/1	1/1
30			Bottom of boring at 30.5 feet.				
35							
40							
45							
50							

PROJECT: TRW-MONADNOCK
 PROJECT NO.:

LOG OF BORING HP-1

FIG.
 B-1

DATE OF BORING 5/21/94 WATER DEPTH 36.3 feet DATE MEASURED 5/21/94
 TYPE OF DRILL RIG CME 75; Discovery Drilling, S. Haugh HOLE DIAMETER 7-inches
 WEIGHT OF HAMMER 140 lbs. FALLING 30-inch SAMPLES 1

DEPTH, feet	SAMPLES	BLOWS, feet	DESCRIPTION	UNC. COMP. STRENGTH, ksf	OVA HEADSPACE, ppm	OVA BREATHING ZONE	OVA CUTTINGS, ppm
SURFACE ELEVATION:							
5			2-inches asphalt concrete. Dark brown, moist, SILTY CLAY (CL), with trace SAND, no odor.  Becomes medium brown with more SAND.			2/2	2/2
10							
12							
15	1	7	Brown, moist, SILTY fine-grained SAND (SP), with trace CLAY, no odor, with GRAVEL up to 3/4-inch across.		2/2	2/2	2/2
		10	Brown, moist, SILTY CLAYEY SAND (SC-SM), no odor, with GRAVEL up to 1-inch across.				
20			Light brown, moist, fine-grained SAND (SP), with trace SILT, no odor.				
25			Light brown, moist, SILTY CLAYEY SAND (SC-SM), no odor, with GRAVEL up to 1-inch across.  GRAVEL up to 3-inches across.			1/1	1/1
30						1/1	1/2
35						1/1	1/2
40			Brown, moist, SILTY CLAY (CH), no odor, no GRAVEL.   Drill rod is wet.			1/1	1/1
45						1/1	1/1
50			Bottom of boring at 48.0 feet.				

PROJECT: TRW-MONADNOCK
 PROJECT NO.:

LOG OF BORING HP-2

FIG.
 B-2

APPENDIX C
DRILLING AND SAMPLING PROTOCOLS

APPENDIX C

DRILLING AND SAMPLING PROTOCOLS

Borings were drilled with 7-inch diameter, hollow-stem, continuous-flight augers. One soil sample from each boring was collected at a depth of approximately 15 feet bgs for stratigraphic information, laboratory analyses, and headspace analysis for VOCs. Sampling was performed using a 2-inch diameter modified split spoon sampler containing four brass tubes. At each sampling depth, the sampler was driven into the undisturbed soil below the lead auger by dropping a 140-pound hammer approximately 30 inches.

The brass tubes from each sampling interval were removed from the sampler. The contents of one tube was extruded into a plastic bag, and a headspace organic vapor analyzer (OVA) reading was measured and recorded on the boring log. A second brass tube was sealed with PVC end caps and placed in a sealable plastic bag for shipment to the analytical laboratory. To identify each tube, sample labels were used; each label contained the project name, sample identification, sample number, date, and sampler's signature.

The sample tubes were stored in a portable ice chest and cooled with ice. Samples were delivered to the analytical laboratory within 24 hours of collection. Chain-of-custody procedures, including the use of sample identification labels and chain-of-custody forms, were used for tracking the collection and shipment of the samples.

Drill augers were steam-cleaned at the driller's facility prior to their being brought to the Presto Food Products site.

APPENDIX D

CHAIN-OF-CUSTODY FORM AND ANALYTICAL LABORATORY REPORT

945069

I2/R6B3

CLIENT NAME: IDEA
 ADDRESS: 11325 GOLDENWOOD
FOUNTAIN VALLEY
 PHONE NO. 714 839-9444 FAX NO.
 PROJECT NAME: TRW - PRESTO
 SEND REPORT TO: IDEA

CHAIN OF CUSTODY RECORD REQUEST FOR ANALYSIS

DATE: 5/21/94
 PAGE 1 OF 1



CKY Incorporated
 Analytical Laboratories
 630 Maple Ave.
 Torrance, Calif. 90503
 Tel: 213-618-8889
 Fax: 213-618-0818

SAMPLER NAME/SIGNATURE				TURN AROUND TIME			ANALYSES REQUIRED											
				NORMAL <input checked="" type="checkbox"/>														
				RUSH <input type="checkbox"/>														
SAMPLE NUMBER	SAMPLING DATE/TIME	PRESERVATIVE	CONTAINER SIZE/TYPE	SAMPLE DESCRIPTION														
				WATER	SOIL	OTHER	418.1	M8015	8010/601	8020/602	8080/608	8240/624	8270/625	CAM Metals				
1 HP-1 / 15'	5/21/94	ice	brass tube		X				X									
2 HP-2 / 15'	↓	↓	↓		X				X									
3 HP-1	5/21/94	ice	40ml vial	X					X									
1 HP-1A	↓	↓	↓	X														
HP-1 HYDRO. RIN.	↓	↓	↓	X					X									
HP-2	↓	↓	↓	X					X									
HP-2A	↓	↓	↓	X														
HP-2 RINSEATE	↓	↓	↓	X					X									
P-1	5/21/94	ice	40ml vial	X					X									

COMMENTS: (- Raw Data / RW QCB formats needed)

T = 5 °C

Relinquished by: (Signature)	Date:	Received by: (Signature)	Date:	Relinquished by: (Signature)	Date:	Received by: (Signature)	Date:
<u>[Signature]</u>	<u>5/21/94</u>	<u>[Signature]</u>	<u>5/21/94</u>	<u>[Signature]</u>	<u>5/21/94</u>	<u>[Signature]</u>	<u>5/21/94</u>
Company: <u>IDEA</u>	Time: <u>2:00pm</u>	Company: <u>TRW</u>	Time: <u>4:00pm</u>	Company: <u>TRW</u>	Time: <u>4:45p</u>	Company: <u>CKY</u>	Time: <u>1645</u>

Storage/Disposal of Samples: Sample will be stored at CKY for 30 days at no charge and at \$10/sample/month thereafter. Disposal of sample by the Laboratory will be charged at \$10/sample.



CKY incorporated Analytical Laboratories

Date: 06-06-1994
CKY Batch No.: 94E069

Attn.: Jeff Gwinn

IDEA
11325 Goldenrod Ave.
Fountain Valley, CA 92708

Subject: Laboratory Report
Project: TRW - Presto

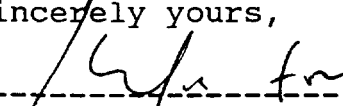
Enclosed is the Laboratory report for samples received on 05/21/94. The samples were received in coolers with ice and intact; the chain-of-custody forms were properly filled out. The data reported include :

Sample ID	Control No.	Matrix	Analysis
-----	-----	-----	-----
HP-1/15'	E069-01	Soil	EPA 8010
HP-2/15'	E069-02	Soil	EPA 8010
HP-1	E069-03	Water	EPA 601
HP-1A	E069-04	Water	Hold
HP-1 HYDRORIN	E069-05	Water	EPA 601
HP-2	E069-06	Water	EPA 601
HP-2 RINSATE	E069-07	Water	EPA 601
P-1	E069-08	Water	EPA 601

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,



Kam Y. Pang, Ph.D.
Laboratory Director

P.S. - All analyses requested for the above referenced project have been completed. Therefore, unless instructed, the remaining portions of the samples will be disposed after fifteen (15) days from the date of this report.

EPA METHOD 8010
HALOGENATED VOLATILE ORGANICS

CLIENT: IDEA	DATE COLLECTED: 05/21/94
PROJECT: TRW - Presto	DATE RECEIVED: 05/21/94
BATCH NO.: 94E069	DATE EXTRACTED: NA
SAMPLE ID: HP-1/15'	DATE ANALYZED: 05/25/94
CONTROL NO.: E069-01	MATRIX: SOIL
% MOISTURE: NA	DILUTION FACTOR: 1

PARAMETERS	results (ug/kg)	MDL (ug/kg)
Dichlorodifluoromethane	ND	20
Chloromethane	ND	20
Vinyl Chloride	ND	20
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Methylene Chloride	ND	20
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon Tetrachloride	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Bromodichloromethane	ND	5
2-Chloroethylvinylether	ND	5
trans-1,3-Dichloropropene	ND	5
cis-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
1,1,1,2-Tetrachloroethane	ND	5
Dibromochloromethane	ND	5
Ethylene Dibromide	ND	5
Chlorobenzene	ND	5
Bromoform	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Chlorotoluene	ND	5
m-Dichlorobenzene	ND	5
p-Dichlorobenzene	ND	5
Benzylchloride	ND	5
o-Dichlorobenzene	ND	5
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
Bromofluorobenzene	73	60-140

MDL : Method Detection Limit

EPA METHOD 8010
HALOGENATED VOLATILE ORGANICS

CLIENT: IDEA	DATE COLLECTED: 05/21/94
PROJECT: TRW - Presto	DATE RECEIVED: 05/21/94
BATCH NO.: 94E069	DATE EXTRACTED: NA
SAMPLE ID: HP-2/15'	DATE ANALYZED: 05/25/94
CONTROL NO.: E069-02	MATRIX: SOIL
% MOISTURE: NA	DILUTION FACTOR: 1

PARAMETERS -----	results (ug/kg) -----	MDL (ug/kg) -----
Dichlorodifluoromethane	ND	20
Chloromethane	ND	20
Vinyl Chloride	ND	20
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Methylene Chloride	ND	20
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon Tetrachloride	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Bromodichloromethane	ND	5
2-Chloroethylvinylether	ND	5
trans-1,3-Dichloropropene	ND	5
cis-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
1,1,1,2-Tetrachloroethane	ND	5
Dibromochloromethane	ND	5
Ethylene Dibromide	ND	5
Chlorobenzene	ND	5
Bromoform	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Chlorotoluene	ND	5
m-Dichlorobenzene	ND	5
p-Dichlorobenzene	ND	5
Benzylchloride	ND	5
o-Dichlorobenzene	ND	5
SURROGATE PARAMETER -----	% RECOVERY -----	QC LIMIT -----
Bromofluorobenzene	78	60-140

MDL : Method Detection Limit

EPA METHOD 8010
HALOGENATED VOLATILE ORGANICS

CLIENT: IDEA	DATE COLLECTED: NA
PROJECT: TRW - Presto	DATE RECEIVED: NA
BATCH NO.: 94E069	DATE EXTRACTED: NA
SAMPLE ID: VBLK1S	DATE ANALYZED: 05/25/94
CONTROL NO.: E069-B1S	MATRIX: SOIL
% MOISTURE: NA	DILUTION FACTOR: 1

PARAMETERS -----	results (ug/kg) -----	MDL (ug/kg) -----
Dichlorodifluoromethane	ND	20
Chloromethane	ND	20
Vinyl Chloride	ND	20
Bromomethane	ND	20
Chloroethane	ND	20
Trichlorofluoromethane	ND	5
1,1-Dichloroethene	ND	5
Methylene Chloride	ND	20
cis-1,2-Dichloroethene	ND	5
trans-1,2-Dichloroethene	ND	5
1,1-Dichloroethane	ND	5
Chloroform	ND	5
1,1,1-Trichloroethane	ND	5
Carbon Tetrachloride	ND	5
1,2-Dichloroethane	ND	5
Trichloroethene	ND	5
1,2-Dichloropropane	ND	5
Bromodichloromethane	ND	5
2-Chloroethylvinylether	ND	5
trans-1,3-Dichloropropene	ND	5
cis-1,3-Dichloropropene	ND	5
1,1,2-Trichloroethane	ND	5
Tetrachloroethene	ND	5
1,1,1,2-Tetrachloroethane	ND	5
Dibromochloromethane	ND	5
Ethylene Dibromide	ND	5
Chlorobenzene	ND	5
Bromoform	ND	5
1,1,2,2-Tetrachloroethane	ND	5
Chlorotoluene	ND	5
m-Dichlorobenzene	ND	5
p-Dichlorobenzene	ND	5
Benzylchloride	ND	5
o-Dichlorobenzene	ND	5
SURROGATE PARAMETER -----	% RECOVERY -----	QC LIMIT -----
Bromofluorobenzene	84	60-140

MDL : Method Detection Limit

EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

```
=====
CLIENT:      IDEA                      DATE COLLECTED: 05/21/94
PROJECT:     TRW - Presto             DATE RECEIVED:  05/21/94
BATCH NO.:   94E069                  DATE EXTRACTED: NA
SAMPLE ID:    HP-1                   DATE ANALYZED:  05/25/94
CONTROL NO.:  E069-03                MATRIX:         WATER
% MOISTURE:   NA                     DILUTION FACTOR: 1
=====
```

PARAMETERS	results (ug/L)	MDL (ug/L)
-----	-----	-----
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	66	1
Methylene Chloride	8.8	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	3.6	1
Chloroform	1.3	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	1.1	1
Trichloroethene	140~	5
1,2-Dichloropropane	ND	1
Bromodichloromethane	ND	1
2-Chloroethylvinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	1.4	1
Tetrachloroethene	49	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
m-Dichlorobenzene	ND	1
p-Dichlorobenzene	ND	1
Benzylchloride	ND	1
o-Dichlorobenzene	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
-----	-----	-----
Bromofluorobenzene	95	65-135

```
=====
MDL   : Method Detection Limit
~     : Dilution Factor is 5 and analyzed on 05/26/94
```

EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

CLIENT: IDEA	DATE COLLECTED: 05/21/94
PROJECT: TRW - Presto	DATE RECEIVED: 05/21/94
BATCH NO.: 94E069	DATE EXTRACTED: NA
SAMPLE ID: HP-1 HYDRORIN	DATE ANALYZED: 05/25/94
CONTROL NO.: E069-05	MATRIX: WATER
% MOISTURE: NA	DILUTION FACTOR: 1

PARAMETERS	results (ug/L)	MDL (ug/L)
-----	-----	-----
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	1.7	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	ND	1
1,2-Dichloropropane	ND	1
Bromodichloromethane	ND	1
2-Chloroethylvinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
m-Dichlorobenzene	ND	1
p-Dichlorobenzene	ND	1
Benzylchloride	ND	1
o-Dichlorobenzene	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
-----	-----	-----
Bromofluorobenzene	92	65-135

MDL : Method Detection Limit

EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

```
=====
CLIENT:      IDEA                      DATE COLLECTED: 05/21/94
PROJECT:     TRW - Presto              DATE RECEIVED:  05/21/94
BATCH NO.:   94E069                   DATE EXTRACTED: NA
SAMPLE ID:   HP-2                     DATE ANALYZED:  05/25/94
CONTROL NO.: E069-06                  MATRIX:         WATER
% MOISTURE:  NA                       DILUTION FACTOR: 1
=====
```

PARAMETERS	results (ug/L)	MDL (ug/L)
-----	-----	-----
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	300~	5
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	4.3	1
Chloroform	1.6	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	4.6	1
Trichloroethene	190~	5
1,2-Dichloropropane	ND	1
Bromodichloromethane	ND	1
2-Chloroethylvinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	2.2	1
Tetrachloroethene	22	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
m-Dichlorobenzene	ND	1
p-Dichlorobenzene	ND	1
Benzylchloride	ND	1
o-Dichlorobenzene	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
-----	-----	-----
Bromofluorobenzene	101	65-135

```
=====
MDL   : Method Detection Limit
-     : Dilution Factor is 5 and analyzed on 05/26/94

GC/MS confirmed.
```

EPA METHOD 8010
HALOGENATED VOLATILE ORGANICS

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=====
CLIENT:      IDEA                      DATE COLLECTED: 05/21/94
PROJECT:     TRW - Presto              DATE RECEIVED:  05/21/94
BATCH NO.:   94E069                   DATE EXTRACTED: NA
SAMPLE ID:   HP-2 RINSATE              DATE ANALYZED:  05/25/94
CONTROL NO.: E069-07                  MATRIX:         WATER
% MOISTURE:  NA                        DILUTION FACTOR: 1
=====
```

PARAMETERS -----	results (ug/L) -----	MDL (ug/L) -----
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	1.6	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	ND	1
1,2-Dichloropropane	ND	1
Bromodichloromethane	ND	1
2-Chloroethylvinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
m-Dichlorobenzene	ND	1
p-Dichlorobenzene	ND	1
Benzylchloride	ND	1
o-Dichlorobenzene	ND	1
SURROGATE PARAMETER -----	% RECOVERY -----	QC LIMIT -----
Bromofluorobenzene	73	65-135

=====

MDL : Method Detection Limit

EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

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=====
CLIENT:      IDEA                      DATE COLLECTED: 05/21/94
PROJECT:     TRW - Presto              DATE RECEIVED:  05/21/94
BATCH NO.:   94E069                   DATE EXTRACTED: NA
SAMPLE ID:    P-1                     DATE ANALYZED:  05/25/94
CONTROL NO.:  E069-08                 MATRIX:         WATER
% MOISTURE:   NA                      DILUTION FACTOR: 1
=====
```

PARAMETERS	results (ug/L)	MDL (ug/L)
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	1.6	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	ND	1
1,2-Dichloropropane	ND	1
Bromodichloromethane	ND	1
2-Chloroethylvinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
m-Dichlorobenzene	ND	1
p-Dichlorobenzene	ND	1
Benzylchloride	ND	1
o-Dichlorobenzene	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
Bromofluorobenzene	84	65-135

MDL : Method Detection Limit

GC/MS confirmed.

EPA METHOD 8010
HALOGENATED VOLATILE ORGANICS

```
=====
CLIENT:      IDEA                      DATE COLLECTED:  NA
PROJECT:     TRW - Presto              DATE RECEIVED:   NA
BATCH NO.:   94E069                   DATE EXTRACTED:  NA
SAMPLE ID:   VBLK03                    DATE ANALYZED:   05/25/94
CONTROL NO.: E069-B1W                  MATRIX:         WATER
% MOISTURE:  NA                        DILUTION FACTOR: 1
=====
```

PARAMETERS	results (ug/L)	MDL (ug/L)
-----	-----	-----
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	ND	1
1,2-Dichloropropane	ND	1
Bromodichloromethane	ND	1
2-Chloroethylvinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
m-Dichlorobenzene	ND	1
p-Dichlorobenzene	ND	1
Benzylchloride	ND	1
o-Dichlorobenzene	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
-----	-----	-----
Bromofluorobenzene	84	65-135

MDL : Method Detection Limit

EPA METHOD 8010
HALOGENATED VOLATILE ORGANICS

```
=====
CLIENT:      IDEA                      DATE COLLECTED:  NA
PROJECT:     TRW - Presto             DATE RECEIVED:   NA
BATCH NO.:   94E069                  DATE EXTRACTED:  NA
SAMPLE ID:   VBLK06                  DATE ANALYZED:   05/26/94
CONTROL NO.: E069-B2W                MATRIX:         WATER
% MOISTURE:  NA                      DILUTION FACTOR: 1
=====
```

PARAMETERS	results (ug/L)	MDL (ug/L)
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	ND	1
1,2-Dichloropropane	ND	1
Bromodichloromethane	ND	1
2-Chloroethylvinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
m-Dichlorobenzene	ND	1
p-Dichlorobenzene	ND	1
Benzylchloride	ND	1
o-Dichlorobenzene	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
Bromofluorobenzene	86	65-135

MDL : Method Detection Limit

CLIENT: IDEA
PROJECT: TRW - Presto
METHOD: EPA 8010
MATRIX: SOIL

Parameter	SAMPLE CONC (ug/kg)	SPIKE ADDED (ug/kg)	MS CONC (ug/kg)	MS % REC	SPIKE ADDED (ug/kg)	MSD CONC (ug/kg)	MSD % REC	% RPD
1,1-DCE	ND	150	120	80	150	124	83	4
TCE	ND	150	154	103	150	155	103	0
Chlorobenzene	ND	150	154	103	150	170	113	9
QC LIMIT:				60-140			60-140	40

CKY QUALITY CONTROL DATA
SPIKE/SPIKE DUPLICATE ANALYSIS

CLIENT: IDEA
PROJECT: TRW - Presto
METHOD: EPA 601/8010
MATRIX: WATER

BATCH NO.: 94E069 DATE RECEIVED: 05/21/94
SAMPLE ID: HP-2 RINSATE DATE EXTRACTED: NA
CONTROL NO.: E069-07 DATE ANALYZED: 05/25/94

ACCESSION: 94E069

Parameter	SAMPLE CONC (ug/L)	SPIKE ADDED (ug/L)	MS CONC (ug/L)	MS % REC	SPIKE ADDED (ug/L)	MSD CONC (ug/L)	MSD % REC	% RPD
1,1-DCE	2.10	30.00	34.00	113	30.00	34.00	113	0
TCE	ND	30.00	29.00	97	30.00	29.00	97	0
Chlorobenzene	ND	30.00	32.00	107	30.00	32.00	107	0

QC LIMIT: 65-135 65-135 30

CKY QUALITY CONTROL DATA
LABORATORY CONTROL SAMPLE ANALYSIS

CLIENT: IDEA
PROJECT: TRW - Presto
METHOD: EPA 8010/601
MATRIX: WATER

=====

BATCH NO.:	94E069	DATE RECEIVED:	NA
SAMPLE ID:	LCS06	DATE EXTRACTED:	NA
CONTROL NO.:	E069-L2W	DATE ANALYZED:	05/26/94
ACCESSION:	94E069		

PARAMETER	TRUE VALUE (ug/L)	FOUND VALUE (ug/L)	LCS RECOVERY (%)
-----	-----	-----	-----
1,1-DCE	30	26	87
TCE	30	24	80
Chlorobenzene	30	27	90

QC LIMIT: 70-125

CKY QUALITY CONTROL DATA
LABORATORY CONTROL SAMPLE ANALYSIS

CLIENT: IDEA
PROJECT: TRW - Presto
METHOD: EPA 8010/601
MATRIX: WATER

=====

BATCH NO.:	94E069	DATE RECEIVED:	NA
SAMPLE ID:	LCS03	DATE EXTRACTED:	NA
CONTROL NO.:	E069-L1W	DATE ANALYZED:	05/25/94
ACCESSION:	94E069		

PARAMETER	TRUE VALUE (ug/L)	FOUND VALUE (ug/L)	LCS RECOVERY (%)
-----	-----	-----	-----
1,1-DCE	30	30	100
TCE	30	25	83
Chlorobenzene	30	27	90

QC LIMIT: 70-125

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

LABORATORY REPORT FORM

Laboratory Name: CKY Incorporated

Address: 630 Maple Avenue, Torrance, CA 90503

Telephone: (310) 618-8889

Laboratory Certification

(ELAP) No.: 1111 Expiration Date: _____

Laboratory Director's Name (Print): Kam Y. Pang, Ph.D.

Laboratory Director's Signature: _____

Client: IDEA

Project No.: TRW - PRESTO

Analytical Method: (Circle One)	EPA 502.1	EPA 503.1	EPA 502.2	EPA 524.1
	EPA 601	EPA 602		EPA 524.2
	<u>EPA 8010</u>	EPA 8020	EPA 8021	EPA 624
				EPA 8240
				EPA 8260

Other: _____

Date Sampled: 05/21/94

Date Received: 05/21/94

Date Reported: 06/07/94

Sample Matrix: soil & water

Extraction Method: 5030

Extraction Material: NA

Chain of Custody Received:

Sample Condition

Yes

No

--Sample Headspace Description (%):

--Sample Container Materials:

ANALYTICAL TEST RESULT (a)
 Reporting Unit (Circle One): ug/kg ug/L

DATE ANALYZED		5-25-94	5-25-94	5-25-94
DATE EXTRACTED		NA	NA	NA
DILUTION FACTOR		1	1	1
LAB SAMPLE I.D.		VBLK03	E069-1	E069-2
CLIENT SAMPLE I.D.		-	HP-1/15'	HP-2/15'
COMPOUND (b)	MDL	MB	1	2
Bromobenzene				
Bromodichloromethane				
Bromoform	5	ND	ND	ND
Bromomethane	20	ND	ND	ND
Carbon tetrachloride	5	ND	ND	ND
Chloroethane	20	ND	ND	ND
Chloroform	5	ND	ND	ND
1-Chlorohexane				
Chloromethane	20	ND	ND	ND
Dibromochloromethane	5	ND	ND	ND
Dibromomethane				
Dichlorodifluoromethane	20	ND	ND	ND
1,1-Dichloroethane (1,1-DCA)	5	ND	ND	ND
1,2-Dichloroethane (1,2-DCA)	5	ND	ND	ND
1,1-Dichloroethylene (1,1-DCE)	5	ND	ND	ND
trans-1,2-Dichloroethylene	5	ND	ND	ND
Dichloromethane				
1,2-Dichloropropane	5	ND	ND	ND
cis-1,3-Dichloropropylene	5	ND	ND	ND
trans-1,3-Dichloropropylene	5	ND	ND	ND
1,1,1,2-Tetrachloroethane	5	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND
Tetrachloroethylene (PCE)	5	ND	ND	ND
1,1,1-Trichloroethane (111-TCA)	5	ND	ND	ND
1,1,2-Trichloroethane (112-TCA)	5	ND	ND	ND
Trichloroethylene (TCE)	5	ND	ND	ND
1,2,3-Trichloropropane				
Trichlorofluoromethane	5	ND	ND	ND
Vinyl chloride	20	ND	ND	ND
Benzene				
Chlorobenzene	5	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND
Ethyl benzene				
Toluene				

ANALYTICAL TEST RESULT (cont'd)

COMPOUND (b)	MDL	MB	1	2		
m,p-Xylenes						
o-Xylene						
Acetone						
Acrolein						
Acrylonitrile						
Bromochloromethane						
n-Butylbenzene						
sec-Butylbenzene						
tert-Butylbenzene						
2-Chloroethylvinyl ether	5	ND	ND	ND		
2-Chlorotoluene						
4-Chlorotoluene						
Dichlorodifluoromethane	5	ND	ND	ND		
cis-1,2-Dichloroethylene	5	ND	ND	ND		
1,3-Dichloropropane						
2,2-Dichloropropane						
1,1-Dichloropropylene						
Ethylene dibromide (EDB)	5	ND	ND	ND		
Hexachlorobutadiene						
Isopropylbenzene						
p-Isopropyltoluene						
Methyl Ethyl Ketone						
Methyl Isobutyl Ketone						
Naphthalene						
n-Propylbenzene						
Styrene						
1,2,3-Trichlorobenzene						
1,2,4-Trichlorobenzene						
1,2,4-Trimethylbenzene						
1,3,5-Trimethylbenzene						
1,1,2-Trichloro-trifluoroethane						
SURROGATE	SPK CONC	ACP%	MB %RC	%RC	%RC	%RC
Bromofluorobenzene	50	60-140	84	73	78	

a = Report Any Value > MDL; b = Listed Compounds Are Ordered by Laboratory Analytical Methods: Halogenated, Aromatic, then Remaining Compounds Identified by GC/MS.

SPK CONC = Spiking Concentration (<5 x PQL); ACP % Acceptable Range of Percent; %RC = % Recovery

MDL = Method Detection Limit; MB = Method Blank; ND = Not Detected (Below MDL); NA = Not Analyzed

ANALYTICAL TEST RESULT (a)
Reporting Unit (Circle One): ug/kg

ug/L

DATE ANALYZED		5-25-94	5-25-94	5-25-94	5-25-94
DATE EXTRACTED		NA	NA	NA	NA
DILUTION FACTOR		1	1	1	1
LAB SAMPLE I.D.		VBLKD3	E069-D3	E069-05	E069-06
CLIENT SAMPLE I.D.		-	HP-1	HP-1A	HP-2
COMPOUND (b)	MDL	MB1	1	2	3
Bromobenzene					
Bromodichloromethane	1	ND	ND	ND	ND
Bromoform	1	ND	ND	ND	ND
Bromomethane	5	ND	ND	ND	ND
Carbon tetrachloride	1	ND	ND	ND	ND
Chloroethane	5	ND	ND	ND	ND
Chloroform	1	ND	1.3	1.7	1.6
1-Chlorohexane					
Chloromethane	5	ND	ND	ND	ND
Dibromochloromethane	1	ND	ND	ND	ND
Dibromomethane					
Dichlorodifluoromethane	5	ND	ND	ND	ND
1,1-Dichloroethane (1,1-DCA)	1	ND	3.6	ND	4.3
1,2-Dichloroethane (1,2-DCA)	1	ND	ND	ND	4.6
1,1-Dichloroethylene (1,1-DCE)	1	ND	66	ND	300*
trans-1,2-Dichloroethylene	1	ND	ND	ND	ND
Dichloromethane					
1,2-Dichloropropane	1	ND	ND	ND	ND
cis-1,3-Dichloropropylene	1	ND	ND	ND	ND
trans-1,3-Dichloropropylene	1	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	1	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND	ND	ND
Tetrachloroethylene (PCE)	1	ND	49	ND	22
1,1,1-Trichloroethane (111-TCA)	1	ND	ND	ND	ND
1,1,2-Trichloroethane (112-TCA)	1	ND	ND	ND	2.2
Trichloroethylene (TCE)	1	ND	140*	ND	190*
1,2,3-Trichloropropane					
Trichlorofluoromethane	1	ND	ND	ND	ND
Vinyl chloride	5	ND	ND	ND	ND
Benzene					
Chlorobenzene	1	ND	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND	ND
Ethyl benzene					
Toluene					

* DF=5; analyzed on 05/20/94.

ANALYTICAL TEST RESULT (cont'd)

COMPOUND (b)		MDL	MBI	1	2	3
m,p-Xylenes						
o-Xylene						
Acetone						
Acrolein						
Acrylonitrile						
Bromochloromethane						
n-Butylbenzene						
sec-Butylbenzene						
tert-Butylbenzene						
2-Chloroethylvinyl ether		1	ND	ND	ND	ND
2-Chlorotoluene						
4-Chlorotoluene						
Dichlorodifluoromethane		5	ND	ND	ND	ND
cis-1,2-Dichloroethylene		1	ND	ND	ND	ND
1,3-Dichloropropane						
2,2-Dichloropropane						
1,1-Dichloropropylene						
Ethylene dibromide (EDB)		1	ND	ND	ND	ND
Hexachlorobutadiene						
Isopropylbenzene						
p-Isopropyltoluene						
Methyl Ethyl Ketone						
Methyl Isobutyl Ketone						
Naphthalene						
n-Propylbenzene						
Styrene						
1,2,3-Trichlorobenzene						
1,2,4-Trichlorobenzene						
1,2,4-Trimethylbenzene						
1,3,5-Trimethylbenzene						
1,1,2-Trichloro-trifluoroethane						
SURROGATE	SPK CONC	ACP%	MB %RC	%RC	%RC	%RC
Bromofluorobenzene	50	65-135	84	95	92	101

a = Report Any Value > MDL; b = Listed Compounds Are Ordered by Laboratory Analytical Methods: Halogenated, Aromatic, then Remaining Compounds Identified by GC/MS.

SPK CONC = Spiking Concentration (<5 x POL); ACP % Acceptable Range of Percent; %RC = % Recovery

MDL = Method Detection Limit; MB = Method Blank; ND = Not Detected (Below MDL); NA = Not Analyzed

ANALYTICAL TEST RESULT (a)
Reporting Unit (Circle One): ug/kg

ug/L

DATE ANALYZED		5-26-94	5-25-94	5-25-94	
DATE EXTRACTED		NA	NA	NA	
DILUTION FACTOR		1	1	1	
LAB SAMPLE I.D.		VBLK06	E069-07	E069-08	
CLIENT SAMPLE I.D.		—	HP-2 RINSE	P-1	
COMPOUND (b)	MDL	MB2	4	5	
Bromobenzene					
Bromodichloromethane	1	ND	ND	ND	
Bromoform	1	ND	ND	ND	
Bromomethane	5	ND	ND	ND	
Carbon tetrachloride	1	ND	ND	ND	
Chloroethane	5	ND	ND	ND	
Chloroform	1	ND	1.6	1.6	
1-Chlorohexane					
Chloromethane	5	ND	ND	ND	
Dibromochloromethane	1	ND	ND	ND	
Dibromomethane					
Dichlorodifluoromethane	5	ND	ND	ND	
1,1-Dichloroethane (1,1-DCA)	1	ND	ND	ND	
1,2-Dichloroethane (1,2-DCA)	1	ND	ND	ND	
1,1-Dichloroethylene (1,1-DCE)	1	ND	ND	ND	
trans-1,2-Dichloroethylene	1	ND	ND	ND	
Dichloromethane					
1,2-Dichloropropane	1	ND	ND	ND	
cis-1,3-Dichloropropylene	1	ND	ND	ND	
trans-1,3-Dichloropropylene	1	ND	ND	ND	
1,1,1,2-Tetrachloroethane	1	ND	ND	ND	
1,1,2,2-Tetrachloroethane	1	ND	ND	ND	
Tetrachloroethylene (PCE)	1	ND	ND	ND	
1,1,1-Trichloroethane (111-TCA)	1	ND	ND	ND	
1,1,2-Trichloroethane (112-TCA)	1	ND	ND	ND	
Trichloroethylene (TCE)	1	ND	ND	ND	
1,2,3-Trichloropropane					
Trichlorofluoromethane	1	ND	ND	ND	
Vinyl chloride	5	ND	ND	ND	
Benzene					
Chlorobenzene	1	ND	ND	ND	
1,2-Dichlorobenzene	1	ND	ND	ND	
1,3-Dichlorobenzene	1	ND	ND	ND	
1,4-Dichlorobenzene	1	ND	ND	ND	
Ethyl benzene					
Toluene					

ANALYTICAL TEST RESULT (cont'd)

COMPOUND (b)	MDL	MB	4	5		
m,p-Xylenes						
o-Xylene						
Acetone						
Acrolein						
Acrylonitrile						
Bromochloromethane						
n-Butylbenzene						
sec-Butylbenzene						
tert-Butylbenzene						
2-Chloroethylvinyl ether	1	ND	ND	ND		
2-Chlorotoluene						
4-Chlorotoluene						
Dichlorodifluoromethane	5	ND	ND	ND		
cis-1,2-Dichloroethylene	1	ND	ND	ND		
1,3-Dichloropropane						
2,2-Dichloropropane						
1,1-Dichloropropylene						
Ethylene dibromide (EDB)	1	ND	ND	ND		
Hexachlorobutadiene						
Isopropylbenzene						
p-Isopropyltoluene						
Methyl Ethyl Ketone						
Methyl Isobutyl Ketone						
Naphthalene						
n-Propylbenzene						
Styrene						
1,2,3-Trichlorobenzene						
1,2,4-Trichlorobenzene						
1,2,4-Trimethylbenzene						
1,3,5-Trimethylbenzene						
1,1,2-Trichloro-trifluoroethane						
SURROGATE	SPK CONC	ACP%	MB %RC	%RC	%RC	%RC
Bromofluorobenzene	50	65-135	86	73	84	

a = Report Any Value > MDL; b = Listed Compounds Are Ordered by Laboratory Analytical Methods: Halogenated, Aromatic, then Remaining Compounds Identified by GC/MS.

SPK CONC = Spiking Concentration (<5 x PQL); ACP % Acceptable Range of Percent; %RC = % Recovery

MDL = Method Detection Limit; MB = Method Blank; ND = Not Detected (Below MDL); NA = Not Analyzed

QA/QC REPORT

Reporting Unit (Circle One): ug/kg ug/L

I. Matrix Spike (MS) Matrix Spike Duplicate (MSD)

DATE PERFORMED: 5-25-94
 BATCH: 94E069
 LAB SAMPLE I.D.: E069-07

ANALYTE	SPK CONC	MS	%MS	MSD	% MSD	RPD	ACP %MS	ACP RPD
1,1-DCE	30	34	113	34	113	0	65-135	30
TCE	30	29	97	29	97	0	65-135	30
Chlorobenzene	30	32	107	32	107	0	65-135	30

II. Laboratory Quality Control Check Sample

DATE PERFORMED: 5-25-94
 BATCH: 94E069
 LAB SAMPLE I.D.: LCS03

ANALYTE	SPK CONC	RESULT	% RECOVERY	ACP %
1,1-DCE	30	30	100	80-120
TCE	30	25	83	80-120
Chlorobenzene	30	27	90	80-120
				80-120
				80-120
				80-120
				80-120

ANALYST: YL

DATE: 5/31/94

QA/QC REPORT

Reporting Unit (Circle One): ug/kg ug/L

I. Matrix Spike (MS) Matrix Spike Duplicate (MSD) - ug/kg

DATE PERFORMED: 5-25-94

BATCH: 94E069

LAB SAMPLE I.D.: E069-1

ANALYTE	SPK CONC	MS	%MS	MSD	% MSD	RPD	ACP %MS	ACP RPD
1,1 - DCE	150	120	80	124	83	4	60-140	40
TCE	150	154	103	155	103	0	60-140	40
Chlorobenzene	150	154	103	170	113	9	60-140	40

II. Laboratory Quality Control Check Sample - ug/L

DATE PERFORMED: 5-26-94

BATCH: 94E069

LAB SAMPLE I.D.: LCS06

ANALYTE	SPK CONC	RESULT	% RECOVERY	ACP %
1,1 - DCE	30	26	87	80-120
TCE	30	24	80	80-120
Chlorobenzene	30	27	90	80-120
				80-120
				80-120
				80-120
				80-120

ANALYST: YL

DATE: 5/31/94

QA/QC REPORT

III. Calibration Standard

MOST RECENT
INITIAL
CALIBRATION
DATE: 5-25-94

SUPPLY SOURCE: ultra scientific

DAILY
CALIBRATION
DATE: 05-26-94
ultra scientific

COMPOUND(c)	INITIAL RF ave	%RSD(d)	DAILY RF	%DIFF(e) w/RF ave
Bromobenzene				
Bromochloromethane				
Bromodichloromethane	3.59	14	3.77	5.0
Bromoform ^	8.08	20	8.39	3.8
Bromomethane	33.7	13.5	38.1	13
Carbon tetrachloride	3.53	34	3.51	0.8
Chloroethane	9.24	8	8.93	3.4
Chloroform*	3.08	22	3.1	0.5
1-Chlorohexane:				
Chloromethane ^	8.23	12	9.65	17
Dibromochloromethane	5.51	16	5.51	0
Dibromomethane				
Dichloromethane (Methylene chloride)	18.2	8	18.03	0.9
1,1-Dichloroethane (1,1-DCA) ^	6.17	16.8	5.84	5.4
1,2-Dichloroethane (1,2-DCA)	3.08	12	3.4	10
1,1-Dichloroethylene(1,1-DCE)*	14.6	9.8	15.8	7.5
trans-1,2-Dichloroethylene	10.7	13	10.1	5.6
1,2-Dichloropropane*	3.32	12	3.56	7.1
cis-1,3-Dichloropropylene	3.45	12	3.53	2.2
trans-1,3-Dichloropropylene	4.8	18	4.63	3.6
1,1,1,2-Tetrachloroethane	2.39	13	2.48	3.4
1,1,2,2-Tetrachloroethane ^	4.48	6	4.8	7.1
Tetrachloroethylene (PCE)	2.44	9	2.45	0.3
1,1,1-Trichloroethane(1,1,1-TCA)	2.84	13	3.02	6.1
1,1,2-Trichloroethane(1,1,2-TCA)	3.45	13	3.43	0.6
Trichloroethylene(TCE)	3.02	13	3.23	6.8
1,2,3-Trichloropropane				
Trichlorofluoromethane	17.4	9	17.2	0.9
Vinyl chloride(VCl)*	3.74	13	4.21	12
Benzene				
Chlorobenzene ^	.869	19	9.09	4.6
1,2-Dichlorobenzene	.523	15	5.36	2.3
1,3-Dichlorobenzene	6.12	14	5.95	2.8
1,4-Dichlorobenzene	4.94	9.5	5.03	1.6
Ethyl benzene*				

III. Calibration Standard (con't)

COMPOUND(c)	INITIAL RF ave	%RSD(d)	DAILY RF	%DIFF(e) w/RF ave
Toluene*				
m,p-Xylenes				
o-Xylene				
Acetone				
Acrolein				
Acrylonitrile				
n-Butylbenzene				
sec-Butylbenzene				
tert-Butylbenzene				
2-Chloroethylvinylether	15.3	28	15.3	0
2-Chlorotoluene	7.05	8	7.82	11
4-Chlorotoluene				
Dichlorodifluoromethane	22.8	12	29.3	28
cis-1,2-Dichloroethylene	6.47	30	5.42	16
trans-1,2-Dichloroethylene				
1,3-Dichloropropane				
2,2-Dichloropropane				
1,1-Dichloropropylene				
Ethylene dibromide (EDB)	5.87	10	6.37	8.4
Hexachlorobutadiene				
Isopropylbenzene				
p-Isopropyltoluene				
Methyl Ethyl Ketone				
Methyl Isobutyl Ketone				
Napthalene				
n-Propylbenzene				
Styrene				
1,2,3-Trichlorobenzene				
1,2,4-Trichlorobenzene				
1,2,4-Trimethylbenzene				
1,3,5-Trimethylbenzene				
1,1,2-Trichlorotrifluoroethane				

SPK CONC = Spiking Concentration ($< 5 \times \text{PQL}$); PQL = Practical Quantitation Limit

%MS = Percent Recovery of MS; %MSD = Percent Recovery of MSD; RPD = Relative Percent Difference;

ACP = Acceptable Range of Percent; INITIAL RF = Average Response Factor From Initial Calibration;

DAILY RF = Response Factor From Daily Calibration; %RSD = Percent Relative Standard Deviation;

%DIFF = Percent Difference; c = Listed Compounds are Ordered by Laboratory Analytical Methods: Halogenated,

Aromatic, then Remaining Compounds Identified by GC/MS.

d = Value $< 10\%$ for GC EPA Methods 500 & 600 Series, $< 20\%$ for GC EPA Methods 8000 Series, $< 30\%$ for GC/MS Methods.

e = Value $< 20\%$ for GC EPA Methods 500 & 600 Series, $< 15\%$ for GC EPA Methods 8000 Series, $< 25\%$ for GC/MS Methods.

* = Calibration Check Compounds (CCC) for GC/MS Method

^ = System Performance Check Compounds (SPCC) for GC/MS Method

QA/QC REPORT

IV. Check Standard

MOST RECENT

INITIAL

CALIBRATION

DATE: 05-25-94

SUPPLY SOURCE: ultra scientific

CHECK

STANDARD

DATE: 05-25-94

Restek

COMPOUND(c)	INITIAL RF ave	%RSD(d)	CHECK STANDARD	%DIFF(e) w/RF ave
Trichlorofluoromethane	17.4	9	17.8	3
1,1-Dichloroethene	14.6	9.8	14.6	.01
Methylene Chloride	18.2	8	17.6	3
trans-1,2-Dichloroethene	10.7	13	10.1	5
1,1-Dichloroethane	6.17	16.8	5.70	8
Chloroform	3.08	22	2.69	13
1,1,1-Trichloroethane	2.84	13	2.61	8
Carbon Tetrachloride	3.53	34	2.89	18
1,2-Dichloroethane-d4				
Benzene				
1,2-Dichloroethane	3.08	12	2.88	6
Trichloroethene	3.02	13	2.83	6
1,2-Dichloropropane	3.32	12	3.12	6
Bromodichloromethane	3.59	14	3.32	7
cis-1,3-Dichloropropene	3.45	12	3.25	6
Toluene-d8				
Toluene				
trans-1,3-Dichloropene	4.8	18	4.36	9
1,1,2-Trichloroethane	3.45	13	3.26	5
Tetrachloroethene	2.44	9	2.36	3
Dibromochloromethane	5.51	16	5.10	7
Chlorobenzene	.869	19	7.87	9
Ethylbenzene				
Bromoform	8.08	20	7.26	10
Bromofluorobenzene	30.02	8	29.8	5
1,1,2,2-Tetrachloroethane	4.48	6	4.41	1.6

RF = Response Factor from daily standard file

RF = Average Response Factor from Initial Calibration

R6C4

GK

C K Y incorporated
Analytical Laboratories
630 Maple Ave.
Torrance, Calif. 90503
Tel: 310-618-8889
Fax: 310-618-0818

CLIENT
NAME: TRW
ADDRESS: ONE SPACE PARK
REDONDO BEACH
PHONE NO. 813 2722 FAX NO.
PROJECT NAME: MONADNOCK
SEND REPORT TO: DEBBIE TAKASHIMA

DATE: 6-21-94
PAGE 1 OF 1

[illegible]

Storage/Disposal of Samples: Sample will be stored at CKY for 30 days at no charge and at \$10/sample/month thereafter. Disposal of sample by the Laboratory will be charged at \$10/sample.



CKY incorporated Analytical Laboratories

Date: 07-01-1994
CKY Batch No.: 94F057

COPY

Attn.: Debbie Takashima R2 1112

TRW
One Space Park Drive
Redondo Beach, CA 90278

Subject: Laboratory Report
Project: MONADNOCK

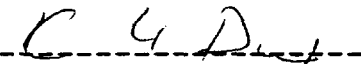
Enclosed is the Laboratory report for samples received on 06/21/94. The samples were received in coolers with ice and intact; the chain-of-custody forms were properly filled out. The data reported include :

Sample ID	Control No.	Matrix	Analysis
-----	-----	-----	-----
TRIP BLANK	F057-01	Water	EPA 601
MW-1	F057-02	Water	EPA 601
MW-4	F057-03	Water	EPA 601
MW-7	F057-04	Water	EPA 601
MW-2	F057-05	Water	EPA 601
MW-11	F057-06	Water	EPA 601
MW-3	F057-07	Water	EPA 601
MW-8	F057-08	Water	EPA 601
RINSATE(F-BLK)	F057-09	Water	EPA 601

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,



Kam Y. Pang, Ph.D.
Laboratory Director

P.S. - All analyses requested for the above referenced project have been completed. Therefore, unless instructed, the remaining portions of the samples will be disposed after fifteen (15) days from the date of this report.

EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

```
=====
CLIENT:      TRW                      DATE COLLECTED: 06/21/94
PROJECT:     MONADNOCK                DATE RECEIVED:  06/21/94
BATCH NO.:   94F057                  DATE EXTRACTED: NA
SAMPLE ID:   TRIP BLANK              DATE ANALYZED:  06/28/94
CONTROL NO.: F057-01                 MATRIX:        WATER
% MOISTURE:  NA                       DILUTION FACTOR: 1
=====
```

PARAMETERS	results (ug/L)	MDL (ug/L)
-----	-----	-----
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	ND	1
1,2-Dichloropropane	ND	1
Dibromomethane	ND	1
Bromodichloromethane	ND	1
2-Chloroethyl vinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
1,3-Dichloropropane	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
Benzylchloride	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
-----	-----	-----
Bromofluorobenzene	87	65-135

MDL: Method Detection Limit



EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

```
=====
CLIENT:      TRW                      DATE COLLECTED: 06/21/94
PROJECT:     MONADNOCK                DATE RECEIVED:  06/21/94
BATCH NO.:   94F057                  DATE EXTRACTED: NA
SAMPLE ID:    MW-1                    DATE ANALYZED:  06/29/94
CONTROL NO.:  F057-02                MATRIX:        WATER
% MOISTURE:   NA                      DILUTION FACTOR: 1
=====
```

PARAMETERS	results (ug/L)	MDL (ug/L)
-----	-----	-----
Dichlorodifluoromethane	38	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	ND	1
1,2-Dichloropropane	ND	1
Dibromomethane	ND	1
Bromodichloromethane	ND	1
2-Chloroethyl vinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
1,3-Dichloropropane	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
Benzylchloride	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
-----	-----	-----
Bromofluorobenzene	103	65-135

MDL: Method Detection Limit

EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

CLIENT: TRW	DATE COLLECTED: 06/21/94
PROJECT: MONADNOCK	DATE RECEIVED: 06/21/94
BATCH NO.: 94F057	DATE EXTRACTED: NA
SAMPLE ID: MW-4	DATE ANALYZED: 06/28/94
CONTROL NO.: F057-03	MATRIX: WATER
% MOISTURE: NA	DILUTION FACTOR: 1

PARAMETERS	results (ug/L)	MDL (ug/L)
Dichlorodifluoromethane	39	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	ND	1
1,2-Dichloropropane	ND	1
Dibromomethane	ND	1
Bromodichloromethane	ND	1
2-Chloroethyl vinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
1,3-Dichloropropane	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
Benzylchloride	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
Bromofluorobenzene	120	65-135

MDL: Method Detection Limit

EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

```
=====
CLIENT:      TRW                      DATE COLLECTED: 06/21/94
PROJECT:     MONADNOCK                DATE RECEIVED:  06/21/94
BATCH NO.:   94F057                  DATE EXTRACTED: NA
SAMPLE ID:    MW-7                    DATE ANALYZED:  06/28/94
CONTROL NO.: F057-04                 MATRIX:        WATER
% MOISTURE:   NA                      DILUTION FACTOR: 1
=====
```

PARAMETERS	results (ug/L)	MDL (ug/L)
-----	-----	-----
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	40	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND~	1
Chloroform	1.8	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	280~	1
1,2-Dichloropropane	ND	1
Dibromomethane	ND	1
Bromodichloromethane	10	1
2-Chloroethyl vinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	2.8	1
Tetrachloroethene	42	1
1,3-Dichloropropane	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
Benzylchloride	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
-----	-----	-----
Bromofluorobenzene	103	65-135

```
=====
MDL:  Method Detection Limit
~ Dilution factor, 10
  Date analyzed, 06/29/94
```



EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

CLIENT: TRW	DATE COLLECTED: 06/21/94
PROJECT: MONADNOCK	DATE RECEIVED: 06/21/94
BATCH NO.: 94F057	DATE EXTRACTED: NA
SAMPLE ID: MW-2	DATE ANALYZED: 06/28/94
CONTROL NO.: F057-05	MATRIX: WATER
% MOISTURE: NA	DILUTION FACTOR: 1

PARAMETERS	results (ug/L)	MDL (ug/L)
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	120~	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	2.2	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	10	1
Chloroform	2.4	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	3.3	1
Trichloroethene	590~	1
1,2-Dichloropropane	ND	1
Dibromomethane	ND	1
Bromodichloromethane	ND	1
2-Chloroethyl vinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	21	1
Tetrachloroethene	130~	1
1,3-Dichloropropane	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
Benzylchloride	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
Bromofluorobenzene	99	65-135

MDL: Method Detection Limit
 ~ Dilution factor, 10
 Date analyzed, 06/29/94

EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

```
=====
CLIENT:      TRW                      DATE COLLECTED: 06/21/94
PROJECT:     MONADNOCK                DATE RECEIVED:  06/21/94
BATCH NO.:   94F057                  DATE EXTRACTED: NA
SAMPLE ID:   MW-11                   DATE ANALYZED:  06/28/94
CONTROL NO.: F057-06                 MATRIX:        WATER
% MOISTURE:  NA                       DILUTION FACTOR: 1
=====
```

PARAMETERS -----	results (ug/L) -----	MDL (ug/L) -----
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	1.8	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	86~	1
1,2-Dichloropropane	ND	1
Dibromomethane	ND	1
Bromodichloromethane	ND	1
2-Chloroethyl vinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	7	1
1,3-Dichloropropane	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
Benzylchloride	ND	1
SURROGATE PARAMETER -----	% RECOVERY -----	QC LIMIT -----
Bromofluorobenzene	101	65-135

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=====
MDL:  Method Detection Limit
~ Dilution factor, 10
  Date analyzed, 06/29/94
```



EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

CLIENT: TRW PROJECT: MONADNOCK BATCH NO.: 94F057 SAMPLE ID: MW-3 CONTROL NO.: F057-07 % MOISTURE: NA	DATE COLLECTED: 06/21/94 DATE RECEIVED: 06/21/94 DATE EXTRACTED: NA DATE ANALYZED: 06/28/94 MATRIX: WATER DILUTION FACTOR: 1
---	---

PARAMETERS	results (ug/L)	MDL (ug/L)
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	ND	1
1,2-Dichloropropane	ND	1
Dibromomethane	ND	1
Bromodichloromethane	ND	1
2-Chloroethyl vinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
1,3-Dichloropropane	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
Benzylchloride	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
Bromofluorobenzene	93	65-135

MDL: Method Detection Limit

EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

CLIENT: TRW	DATE COLLECTED: 06/21/94
PROJECT: MONADNOCK	DATE RECEIVED: 06/21/94
BATCH NO.: 94F057	DATE EXTRACTED: NA
SAMPLE ID: MW-8	DATE ANALYZED: 06/28/94
CONTROL NO.: F057-08	MATRIX: WATER
% MOISTURE: NA	DILUTION FACTOR: 1

PARAMETERS	results (ug/L)	MDL (ug/L)
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	16	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	34	1
1,2-Dichloropropane	ND	1
Dibromomethane	ND	1
Bromodichloromethane	ND	1
2-Chloroethyl vinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	6.8	1
1,3-Dichloropropane	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
Benzylchloride	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
Bromofluorobenzene	120	65-135

MDL: Method Detection Limit

EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

CLIENT: TRW	DATE COLLECTED: 06/21/94
PROJECT: MONADNOCK	DATE RECEIVED: 06/21/94
BATCH NO.: 94F057	DATE EXTRACTED: NA
SAMPLE ID: RINSATE(F-BLK)	DATE ANALYZED: 06/28/94
CONTROL NO.: F057-09	MATRIX: WATER
% MOISTURE: NA	DILUTION FACTOR: 1

PARAMETERS	results (ug/L)	MDL (ug/L)
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	8.5	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	1.4	1
1,2-Dichloropropane	ND	1
Dibromomethane	ND	1
Bromodichloromethane	ND	1
2-Chloroethyl vinyl ether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
1,3-Dichloropropane	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
Benzylchloride	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
Bromofluorobenzene	96	65-135

MDL: Method Detection Limit



EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

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=====
CLIENT:      TRW                      DATE COLLECTED:  NA
PROJECT:     MONADNOCK                DATE RECEIVED:   NA
BATCH NO.:   94F057                  DATE EXTRACTED:  NA
SAMPLE ID:   VBLK1W                  DATE ANALYZED:   06/28/94
CONTROL NO.: F057-B1W                MATRIX:         WATER
% MOISTURE:  NA                      DILUTION FACTOR: 1
=====
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PARAMETERS	results (ug/L)	MDL (ug/L)
-----	-----	-----
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	ND	1
1,2-Dichloropropane	ND	1
Dibromomethane	ND	1
Bromodichloromethane	ND	1
2-Chloroethyl vinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
1,3-Dichloropropane	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
Benzylchloride	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
-----	-----	-----
Bromofluorobenzene	97	65-135

MDL: Method Detection Limit



EPA METHOD 601
HALOGENATED VOLATILE ORGANICS

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=====
CLIENT:      TRW                      DATE COLLECTED:  NA
PROJECT:     MONADNOCK                DATE RECEIVED:   NA
BATCH NO.:   94F057                  DATE EXTRACTED:  NA
SAMPLE ID:   VBLK2W                  DATE ANALYZED:   06/29/94
CONTROL NO.: F057-B2W                MATRIX:         WATER
% MOISTURE:  NA                      DILUTION FACTOR: 1
=====
```

PARAMETERS	results (ug/L)	MDL (ug/L)
-----	-----	-----
Dichlorodifluoromethane	ND	5
Chloromethane	ND	5
Vinyl Chloride	ND	5
Bromomethane	ND	5
Chloroethane	ND	5
Trichlorofluoromethane	ND	1
1,1-Dichloroethene	ND	1
Methylene Chloride	ND	5
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
1,1-Dichloroethane	ND	1
Chloroform	ND	1
1,1,1-Trichloroethane	ND	1
Carbon Tetrachloride	ND	1
1,2-Dichloroethane	ND	1
Trichloroethene	ND	1
1,2-Dichloropropane	ND	1
Dibromomethane	ND	1
Bromodichloromethane	ND	1
2-Chloroethyl vinylether	ND	1
trans-1,3-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
1,1,2-Trichloroethane	ND	1
Tetrachloroethene	ND	1
1,3-Dichloropropane	ND	1
1,1,1,2-Tetrachloroethane	ND	1
Dibromochloromethane	ND	1
Ethylene Dibromide	ND	1
Chlorobenzene	ND	1
Bromoform	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Chlorotoluene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1
Benzylchloride	ND	1
SURROGATE PARAMETER	% RECOVERY	QC LIMIT
-----	-----	-----
Bromofluorobenzene	107	65-135

MDL: Method Detection Limit



CKY QUALITY CONTROL DATA
SPIKE/SPIKE DUPLICATE ANALYSIS

CLIENT: TRW
PROJECT: MONADNOCK
METHOD: EPA 601
MATRIX: WATER

BATCH NO.: 94F057 DATE RECEIVED: NA
SAMPLE ID: HP-4 DATE EXTRACTED: NA
CONTROL NO.: MF003-04 DATE ANALYZED: 06/29/94

ACCESSION: 94MF003 94F057

Parameter	SAMPLE CONC (ug/L)	SPIKE ADDED (ug/L)	MS CONC (ug/L)	MS % REC	SPIKE ADDED (ug/L)	MSD CONC (ug/L)	MSD % REC	% RPD
1,1-DCE	ND	50.00	42.1	84	50.00	53.4	107	24
TCE	ND	50.00	58.3	117	50.00	52.1	104	12
Chlorobenzene	ND	50.00	45.5	91	50.00	42.6	85	7
QC LIMIT:				65-135			65-135	30

CKY QUALITY CONTROL DATA
LABORATORY CONTROL SAMPLE ANALYSIS

CLIENT: TRW
PROJECT: MONADNOCK
METHOD: EPA 601
MATRIX: WATER

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BATCH NO.:	94F057	DATE RECEIVED:	NA
SAMPLE ID:	LCS01	DATE EXTRACTED:	NA
CONTROL NO.:	MF003-L1W	DATE ANALYZED:	06/28/94
ACCESSION:	94MF003	94F057	

PARAMETER	TRUE VALUE (ug/L)	FOUND VALUE (ug/L)	LCS RECOVERY (%)
-----	-----	-----	-----
1,1-DCE	30.00	34.70	116
TCE	30.00	24.60	82
Chlorobenzene	30.00	25.70	86
QC LIMIT:			70-125

CKY QUALITY CONTROL DATA
LABORATORY CONTROL SAMPLE ANALYSIS

CLIENT: TRW
PROJECT: MONADNOCK
METHOD: EPA 601
MATRIX: WATER

=====

BATCH NO.:	94F057	DATE RECEIVED:	NA
SAMPLE ID:	LCS02	DATE EXTRACTED:	NA
CONTROL NO.:	MF003-L2W	DATE ANALYZED:	06/29/94
ACCESSION:	94MF003	94F057	

PARAMETER	TRUE VALUE (ug/L)	FOUND VALUE (ug/L)	LCS RECOVERY (%)
-----	-----	-----	-----
1,1-DCE	30.00	24.30	81
TCE	30.00	25.70	86
Chlorobenzene	30.00	28.60	95
QC LIMIT:			70-125

APPENDIX E

GROUNDWATER SAMPLING AND HANDLING PROTOCOLS

APPENDIX E

GROUNDWATER SAMPLING AND HANDLING PROTOCOLS

Groundwater samples were collected with a Teflon bailer, transferred to 40-milliliter VOA vials, and stored in an ice-cooled chest. Each of the VOA vials was completely filled so as not to allow air bubbles to be trapped in the vial. Duplicate samples were collected from HP-1, though only one sample was analyzed by the laboratory (the duplicate sample was for emergency and/or confirmation purposes).

To identify each vial, sample labels were used; each label contained the project name, sample identification, sample number, date, and sampler's signature. Each sample vial was placed in a sealable plastic bag and stored in a portable ice chest cooled with ice. Samples were delivered to the analytical laboratory within 24 hours of collection. Chain-of-custody procedures, including the use of sample identification labels and chain-of-custody forms, were used for tracking the collection and shipment of the samples.

Sample equipment was cleaned between sample locations using the following general procedures:

- o Water rinse, brush assisted if necessary, to remove dirt and mud
- o Water wash with detergent (TSP)
- o Rinse with deionized water to remove detergent
- o Air dry